AMERA TECH AVIATION INC.

PRIVATE PILOT
&
COMMERCIAL PILOT
FLIGHT MANEUVERS MANUAL

Dennis Boyer, Chief Pilot

Revision 9/19/95

Foreword

I want to welcome you to the flight training program here at AmeraTech. It is our goal to make each of you the best pilot possible during the time that you will be flying with us. In an attempt to help each of you meet that goal, I have written the following flight procedures manual. This will detail the step by step procedures that can be followed to execute each of the required flight maneuvers required for the flight test, and the rest of your flying careers.

Because this is the initial running of the flight procedures manual there undoubtedly be some errors or some areas that will need to be expanded. This manual is to help you - let us know what works and what doesn't in your flight training and it will be revised or modified to make it better for those that follow you.

Dennis Boyer

DENNIS BOYER
CHIEF PILOT AMERATECH

PRIVATE PILOT &COMMERCIAL PILOT
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PREFLIGHT CHECKLIST

1. **Cockpit**
   - Aircraft Documents (ARROW)
   - Master Switch - Off
   - Magnetos - Off - Key on Instrument Panel
   - Switches - Off
   - Circuit Breakers - In
   - Control Wheel Lock - Remove
   - Master Switch - On
   - Fuel Quantity - Check
   - Flaps - Down
   - Generator Light - Low Voltage Warning
   - Master Switch - Off
   - Fuel Shutoff Valve - On

2. **Left Wing Flap**
   - Fuel Sump - Check For fuel Contaminants/Color
   - Flap Track Movement - .5 inches Max
   - Flap Track - No Cracks
   - Flap Actuating Rod-Free With No Binding/Bends
   - Flap Actuating Bracket - No Cracks
   - Aileron/Flap Cables - Excessive Looseness

3. **Left Wheel /Landing Gear**
   - Brake - Wear of Pads
   - Brake - Fluid Leaks
   - Tire - Proper Inflation
   - Tire - Excessive Wear/Bald Spots
   - Tire - Cotter Pin
   - Landing Gear - Corrosion/Damage

4. **Left Empennage**
   - Skin - No Dents/ Damage

5. **Left Elevator/ Horizontal Stabilizer**
   - Skin - No Dents/Cracks
   - Structure - Shake Test
   - Hinges - No Cracks
   - Hinges - Bolts Safetied
   - Control Surfaces - Freedom of Movement
   - Elevator Control Cables - Check

6. **Rudder/Vertical Stabilizer**
   - Light - Color and Security
   - Rotating Beacon - Security
   - Skin - No Dents/Cracks
   - Hinges - No Cracks
   - Hinges - Bolts Safetied
   - Stops - Present and Safetied
   - Lower Fuselage - Cracks In Doubler
   - Tail Tie Down - Removed
   - Rudder Control Cables - Check

7. **Right Elevator/Horizontal Stabilizer**
   - Skin - No Dents/Cracks
   - Structure - Shake Test
   - Hinges - No Cracks
   - Hinges - Bolts Safetied
   - Control Surfaces - Freedom of Movement
   - Trim Tab Hinge - No Cracks
   - Trim Tab Actuator - Cotter Pin
   - Trim Tab Actuator - No Cracks

8. **Right Empennage**
   - Skin - No Dents/ Damage

9. **Right Wing Flap**
   - Fuel Sump - Check For fuel Contaminants/Color
   - Flap Track Movement - .5 inches Max
   - Flap Track - No Cracks
   - Flap Actuating Rod-Free With No Binding/Bends
   - Flap Actuating Bracket - No Cracks
   - Aileron/Flap Cables - Excessive Looseness

10. **Right Wheel/Landing Gear**
    Brake - Wear of Pads
    Brake - Fluid Leaks
    Tire - Proper Inflation
    Tire - Excessive Wear/Bald Spots
    Tire - Cotter Pin
    Landing Gear - Corrosion/Damage

11. **Right Aileron**
    Hinge - Cracks
    Hinge - Safetied
    Hinge Actuating Rod - Freedom of Movement
    Aileron Balance - Present and Security
    Aileron - Freedom of Movement

12. **Right Wing Tip**
    Light - Color and Security
    Fairing - Cracks

13. **Right Wing**
    Wing Attach Pins - Push up on Spar
    Leading Edge - No Dents/Cracks
    Wing Brace/Fairing - No Cracks/Dents
    Wing Tie Downs - Remove
    Fuel Cap - Vented Type/Operation
    Fuel - Touch Gas
    Fuel Cap - Secure

14. **Right Nose**
    Wind Shield - Cracks/Clean
    Oil Level - Check/Not Less Than 4 Qt.
    Fuel Sump - Contaminates/Color
    Magnetos - P Leads Connected
    Engine Mounts - Corrosion/Cracks
    General - Security

15. **Nose Wheel**
    Shimmy Damper-Security/Freedom of Movement
    Steering Rods - Freedom of Movement
    Steering Rods - Cotter Pin
    Steering Rod Boots - Check for Cracking
    Tire - Inflation/Condition, Wheel Axle-Cotter Pin
    Strut - Cracks
    Strut - Straight
    Oleo - Extension/Leaks

16. **Engine Exhaust - Light Gray**
    Propeller Area
    Propeller - Nicks/Damage
    Spinner - Nicks/Security
    Carburetor Air Filter - Clean/Damage
    Engine Inlet - Clear
    Prop Security-Fore/Aft Movement of Prop

17. **Left Nose**
    Static Source - Clear
    Avionics Drain - Clear
    Avionics Vent - Clear
    Wind Shield - Cracks/Clean

18. **Left Wing**
    Leading Edge - No Dents/Cracks
    Wing Tie Downs - Remove
    Wing Brace/Fairing - No Cracks/Dents
    Fuel - Touch Gas
    Fuel Cap - Secure
    Pitot Tube - Cover Off/Clear
    Fuel Vent - Open
    Stall Sensor - Check
    Wing Attach Pins - Push up on Spar

19. **Left Wing Tip**
    Light - Color and Security
    Fairing - Cracks

20. **Left Aileron**
    Hinge - Cracks
    Hinge - Safetied
    Hinge Actuating Rod - Freedom of Movement
    Aileron Balance - Present and Security
    Aileron - Freedom of Movement

AIRSPEEDS/POWER

	C-152	C-172	C-172RG	PA28-140	Warrior	Arrow
Rotate	55	55	55-60	50-60 MPH	55-60 MPH	65
Initial	67	73	75 gear Dn	89 MPH	86 MPH	95 gear Up
			84 gear Up			100 gear Dn
Enroute	80	85	94	100 MPH	100 MPH	110
Climb	Full power		25/2500	Full Power	Full Power	25/2500
Cruise	2300	2300	22/2300	2300	2300	22/2300
Descent	2000	2000	see note 1	1700	1700	see note 1
Traffic	2100	2100	18/2300	1700	1700	18/2300
Pattern	10 flap	10 flap	10 flap	10 flap	10 flap	10 flap
Opposite	1500	1500	15 in	1600	1600	15 in/2500
Downwind	70	80	85	95 MPH	95 MPH	100
Base	65	70	75	95 MPH	95 MPH	100
	20 flap	20 flap	20 flap	20 flap	20 flap	20 flap
Final	55-60	60	65	80	80	90
	30 flap	30 flap	30 flap	Full flaps	Full flaps	Full flaps

A/C Type	Vr	Vx SL	Vx 10K	Vy SL	Vy 10K	Va Gross	Vg Gross	Vso	Vsl	Vfe	Vle	Vno KCAS	Vne KCAS	Flaps Norm	Obst T.O.	Load #/ft2
C150	53	56	56	68	62	97	60	42	49	85		104	141	No	No	10.0
C152	50	55	55	67	61	104	60	43	48	85		110	149	No	10	10.5
C172	59	57	62	70	67	105	70	42	49	85		122	151	No	No	13.2
R172E	52	65	65	83	76	110	74	46	56	87		126	158	No	20	14.3
C177RG	65	62	62	83	79	113	70	50	57	96	122	139	170	10	10	16.1
C182RG	50	64	66	88	74	112	80	37	42	140	140	143	182	No	20	17.8
C182	63	61	61	77	74	110	70	50	56	96			172	20	20	16.9
C210	61	70	70	96	96	118	78	71	84	96	139		196	20	20	19.3
M-20C		70		87		115	91	50	58	87	104	130		No	Yes	
PA-28-140	55	78		89		129	80	55	64	115				No	No	
PA-28-151	60	76		87		124	85	58	65	115				No	No	
PA-28R-180	57	74	87	87		116	105	56	62	109	130	148	186	No	25	16.3

NOTE

In winter, DO NOT decrease manifold pressure at a rate faster than 1 in Hg per minute. During the summer, rate of decrease should be no more than that which would cause the prop to unload too fast.

THE ABOVE AIRSPEEDS, POWER AND FLAP SETTINGS CAN BE ADJUSTED AS NECESSARY FOR THE METEOROLOGICAL CONDITIONS ENCOUNTERED FOR EACH PARTICULAR FLIGHT.

PRIVATE/COMMERCIAL PILOT MANEUVERS

TRANSITIONS:

Objective: To teach students method for changing altitudes and airspeeds.

Content:

A. Level Flight to Best Rate or Cruise Climb:
   1. Increase pitch to best rate or cruise climb attitude and simultaneously advance full throttle.
   2. Trim for best rate or cruise climb
   3. Complete enroute climb checklist

B. Level Flight to Enroute Descent:
   1. Reduce power to 2000 rpm.
   2. Adjust pitch to enroute descent attitude (100 KIAS)
   3. Trim for enroute descent.

C. Climb to Level Cruise Flight:
   1. Decrease pitch to level flight attitude
   2. Allow airspeed to increase to 95 KIAS
   3. Adjust power to cruise setting
   4. Complete cruise checklist

D. Descent to Level Cruise Flight:
   1. Increase pitch to level flight attitude
   2. Adjust power to cruise power setting
   3. Trim for level flight
   4. Complete cruise checklist

E. Descent to Climb:
   1. Increase pitch to cruise climb attitude
   2. Add full power (carb heat off)
   3. Trim for cruise climb
   4. Complete climb checklist

Completion Standards:

Smooth control and attitude changes

Common Errors:

N/A

TAXIING*:*

Objective: To teach proper method of taxing the aircraft with out damage to the aircraft.

Content:

A. Position controls for existing wind conditions
B. Check brakes immediately after airplane begins moving during initial taxi.
C. Control safe taxi speed with throttle and without excessive use of brakes.

Completion Standards:

- N/A -

Common Errors:

1. Taxing too fast
2. Rough steering through use of rudder inputs
3. Trying to "drive" the airplane with the yoke
4. Failure to position the controls appropriate for the wind

TRAFFIC PATTERN OPERATIONS:

Objective: To teach the proper method for entering the traffic pattern.

Content:

A. Entry

1. Complete before landing checklist prior to turning downwind (power set 2100 rpm; flaps 10°)
2. Enter at 45° to the downwind at a point abeam of midpoint of runway in use unless directed otherwise by ATC

B. Downwind Leg:

1. Maintain ground track parallel to and approximately 1/2 to 1 mile from landing runway
2. Maintain traffic pattern altitude (+/- 100 ft)
3. Complete Before Landing Checklist no later than abeam touchdown point on runway when entering downwind leg from crosswind leg.
4. Abeam intended point of touchdown, reduce power to 1500 rpm, maintain altitude with pitch control, and reduce airspeed

   C-152 70 KIAS
   C-172 80 KIAS

5. Turn base when intended point of touchdown is approximately 45° behind wing. (DO NOT TURN BASE UNTIL CLEARED OR SEQUENCED FOR LANDING)

C. Base Leg:

1. Maintain constant airspeed during turn to base leg

   C-152 70 KIAS
   C-172 80 KIAS

2. Maintain ground track perpendicular to extended centerline of runway.
3. Extend flaps 20°, if airspeed and altitude permit
4. Reduce airspeed

   C-152 60 KIAS
   C-172 70 KIAS

5. Turn final with 20° to 30° angle of bank so as to roll out on extended centerline of runway at least 1/4 mile from approach end of runway

D. Final Approach Leg:

1. Maintain ground track over extended centerline of runway
2. Extend flaps 30° when assured of landing unless winds preclude full flaps
3. Reduce airspeed as appropriate for type of landing and approach
4. Adjust pitch and power as necessary to maintain airspeed and descent angle

   C-152 55 KIAS
   C-172 65 KIAS

5. Complete landing - hold the nose wheel off
6. Exit runway at next taxiway or as directed, if full stop, clear runway, stop airplane, complete after landing checklist, and contact ground control.

E. Upwind Leg:

1. Maintain ground track over centerline or extended centerline of runway.
2. Climb at airspeed appropriate to type of takeoff until reaching pattern altitude.
3. If remaining in traffic pattern, turn crosswind at 400' AGL and beyond departure end of runway. If departing traffic turn in direction requested and approved by ATC

F. Crosswind Leg:

1. Maintain ground track perpendicular to extended centerline of runway.
2. Turn downwind approximately 1/2 to 1 mile from landing runway.

Completion Standards:

Common Errors:

1. Poor airspeed control
2. Uncorrected drift
3. Improper runway alignment
4. Failure to identify proper positions on initial call in
5. Over controlling of the aircraft

NORMAL AND CROSSWIND TAKEOFF AND CLIMB:

It has been said that the normal takeoff is in reality a minimal crosswind component takeoff. If you can handle the crosswind takeoff and climb out the normal takeoff and climbout is very easy. This is a "maneuver" that is included for the obvious reasons, but still must be accomplished properly to maintain a level of safety for operations. In the case of the normal or the crosswind takeoff there it is assumed that there are no obstacles in the way and that the runway surface is concrete or asphalt. The assumption is there that there may be a wind that must be adjusted for though.

Objective: To teach the student the proper methods in taking off during normal and crosswind conditions.

Content:

1. Determine wind direction and speed, and hold full aileron into wind.
2. Complete before takeoff checklist
3. Receive ATC clearance for takeoff and check for traffic
4. Align airplane on runway centerline
5. Advance throttle smoothly to maximum power
6. Check engine instruments
7. Maintain directional control on runway centerline
8. Adjust ailerons as necessary for existing wind conditions to maintain wings level.
9. Rotate at appropriate airspeed and accelerate to Vy
10. Climb at Vy with takeoff power until traffic pattern altitude
11. Maintain ground track over extended runway centerline until a turn is required.
12. Complete climb checklist

Completion Standards:

Common Errors:

1. Poor airspeed control
2. Uncorrected drift
3. Improper runway alignment

SHORT-FIELD TAKEOFF AND CLIMB:

During the short-field practice sessions, it is usually assumed that there is a 50 foot obstruction at each end of the runway in addition to the runway being short. The takeoff checklist is the same for a short-field as it is for a normal takeoff. The exception is that the manufactures recommended flap setting is used to achieve the best angle of climb. The recommended airspeeds and flap setting vary from model to model, and can vary from year to year. For example 10 degrees of flaps are recommended for some years of Cessna 172s and none for others.

The short-field takeoff may be initiated by holding the brakes, applying full power, then releasing the brakes. This procedure enables the pilot to see that the engine is producing full power before the take off. This is a final check that the power will be there for a condition where the power availability is critical. This procedure is not mandatory and under some conditions may not be necessary. A takeoff immediately after high speed taxing turn does not permit stabilization of the level in the tanks.

Objective: To teach the student the proper method to take off with obstacles.

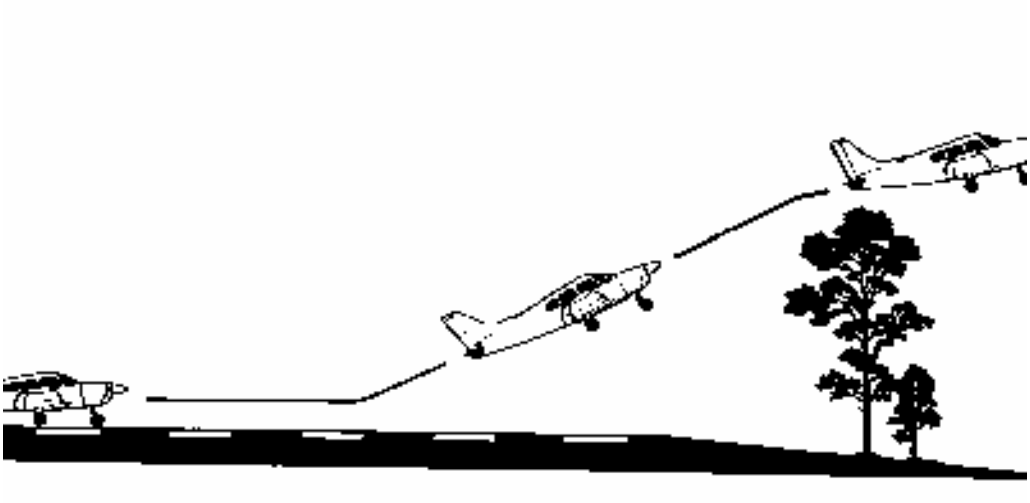
Content:

1. Determine wind direction and speed, and hold full aileron into wind.
2. Complete before takeoff checklist
3. Flaps - 10° - See your flight manual this varies from airplane to airplane)
4. Position aircraft at beginning of runway aligned on centerline
5. Apply brakes and smoothly advance throttle to maximum power.
6. Check engine instruments and release brakes
7. Adjust pitch attitude (approximate level pitch) to attain maximum rate of acceleration
8. Maintain directional control on runway centerline
9. Adjust ailerons as necessary for existing wind conditions to maintain wings level.
10. Rotate at appropriate airspeed and accelerate to Vx
11. Climb at Vx until obstacle is cleared, or until at least 50 ft above the surface, the accelerate to Vy
12. Slowly retract flaps at safe altitude
13. Maintain Vy and takeoff power until traffic pattern altitude.
14. Maintain ground track over runway centerline until a turn is required
15. Complete climb checklist

Completion Standards:

Common Errors:

1. Poor airspeed control
2. Uncorrected drift
3. Improper runway alignment



SOFT-FIELD TAKEOFF AND CLIMB:

The soft field takeoff technique is used whenever the takeoff surface is covered with snow, mud, high grass, loose rocks or that the surface is rough. Because of this, the objective of the soft-field takeoff is to transfer the weight of the aircraft to the wings as rapidly as possible and lift the aircraft clear of the effects of the surface. In these conditions, when it really is a soft field, it my really surprise you just how slow the aircraft will accelerate and will feel like the aircraft is bogging down. For example it may take nearly a cruse power setting just to taxi the aircraft.

Objective: To teach the student the proper take off procedures for soft/tall grass runway conditions.

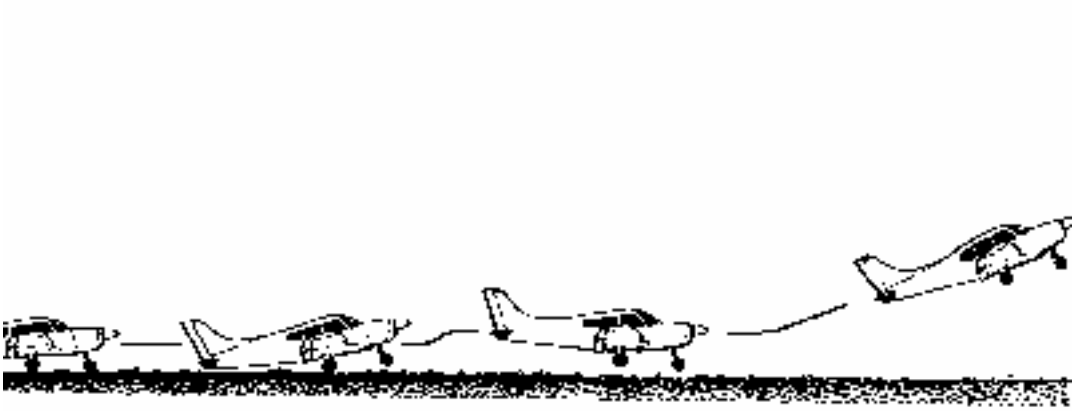
Content:

1. Determine wind direction and speed, and hold full aileron into wind
2. Complete before takeoff checklist
3. Flaps - 10° (verify for the specific airplane)
4. Align aircraft on takeoff path without stopping
5. When aircraft is under control add full power
6. Adjust and maintain pitch attitude which transfer weight from wheels to wings as rapidly as possible
7. Maintain directional control on center of takeoff path
8. Adjust ailerons as necessary for existing wind conditions to maintain wings level.
9. Lift off at slowest possible airspeed and remain in ground effect while accelerating
10. Accelerate to and maintain Vx or Vy as appropriate.
11. Slowly retract flaps when passing Vx and clear of obstacles
12. Maintain Vy and takeoff power until traffic pattern altitude
13. Maintain ground track over extended center of takeoff path until a turn is required
14. Complete climb checklist

Completion Standards:

Common Errors:

1. Poor airspeed control
2. Uncorrected drift
3. Improper runway alignment
4. Misjudging aircraft float resulting in a long landing
5. Improper positioning of controls for winds and runway conditions



APPROACH TO LANDING STALLS

A portion of your total flight time (typically about 3%) will be involved in the landing phase of the airplane operation. While you are in this phase the operation of the aircraft is such the you will be at a low altitude, the airspeed will be low, and the airplane will be in a configuration that is "dirty" or is producing drag. This specific maneuver is required not to show that you can make the airplane quit flying, but that you know what to do when the airplane does quit flying and how you can recognize when the stall is about to happen. This is an extremely important aspect of this maneuver because where it will happen to you in real life is where you do not have much margin for error. You will be low over the ground, low on airspeed, probably making a descending turn to try and get even lower and slower when the "surprise" happens. Your goal throughout this maneuver is to conserve as much altitude and airspeed at the same time as is possible.

Objective: To familiarize the student with the warning signs of a stall, the reaction of the airplane when stalled and the recovery techniques required.

Content:

1. Select an altitude that will allow an recovery no lower than 1500 AGL.
2. Perform clearing turns
3. Identify prominent landmark
4. Decrease power
   a. Fuel - On
   b. Mixture - Rich
   c. Carburetor heat on
   d. decrease power to 1500 RPM (For C-172RG set rpm to 2500)
   e. Oil Pressure - in green
   f. Trim (Optional)
   g. cowl flaps Closed
5. Carb heat - ON
6. Reduce power

C-152	1500 rpm
C-172	1500 rpm
C-172RG	15 In Hg

7. Keep ball centered
8. When airspeed below Vfe flaps - 10° (maintain altitude 0 rate of sink)
9. Gear handle - Down (verify gear is down)
10. Flaps - 20° (maintain altitude 0 rate of sink)
11. Flaps - 30° (maintain altitude 0 rate of sink)

12. When reaching normal landing airspeed (C-152: 55 Kts, C-172: 60kts, C-172RG: 65kts), pitch to a landing attitude for three seconds
13. Establish Bank as directed - 30° standard - & clear
14. Reduce power slowly to idle
15. Hold until imminent or full stall as specified by the examiner.
16. **KEEP BALL CENTERED** at all times

- NOTE -

For IMMINENT STALLS - Increase back pressure until stall horn sounds, or loss of control effectiveness. For FULL STALLS - Increase back pressure until aircraft nose drops

Recovery

1. Simultaneously decrease pitch, level wings
2. Power - increase (C-172: full, C-172RG: 25 in Hg)
3. Carburetor heat - off
4. Level wings and adjust pitch attitude for Vy.
5. Flaps - 20°
6. Gear - UP (at positive rate of climb)
7. Remaining flaps up slowly as airspeed builds up
8. Retract Flaps to 10°
9. Establish positive rate of climb
10. Retract Flaps to 0°
11. Establish positive rate of climb
12. Lower nose to cruise attitude while maintaining positive rate of climb
13. Return to original altitude and perform cruise checklist
14. When airspeed has increased decrease power

Completion Standards:

Recovers with minimal altitude loss

Maintains control of aircraft

Maintain heading within 10° (for straight ahead stall)

Common Errors:

1. Improper approach speed - nose too high for flap setting
2. Raising the nose too fast
3. Staring blindly over the nose
4. Not keeping the ball centered through out the maneuver
5. Lowering nose before stall occurs
6. Wings not kept level (on straight ahead stall)
7. Not relaxing back pressure and entering secondary stall

POWER ON STALL (TAKE OFF STALL)

Like the approach to landing stall a portion of your total flight time (also typically about 3%) will be involved in the takeoff phase of the airplane operation. While you are in this phase the operation of the aircraft is such the you will be at a low altitude, the airspeed will be low, and the airplane will be in a configuration that is established to try and produce a climb. This specific maneuver (like the approach to landing stall) is required not to show that you can make the airplane quit flying, but that you know what to do when the airplane does, and how you can recognize when the stall is about to happen. The identification of the stall is an extremely important aspect of this maneuver because where it will happen to you in real life where you will be close to the ground and at a low airspeed while you are trying to climb. Your goal throughout this maneuver (as in the approach to landing stall) is to conserve as much

altitude and airspeed at the same time as is possible while keeping that airplane flying. Remember that recovery is what is the objective of stalls.

Objective: To familiarize the student with the warning signs of a stall with the power at the take off condition, the reaction of the airplane when stalled and the recovery techniques required.

Content:

1. Select an altitude that will allow an recovery no lower than 1500 AGL
2. Perform clearing turns
3. Identify prominent landmark
4. Decrease power
   a. Fuel - On
   b. Mixture - Rich
   c. Carburetor heat on
   d. Decrease power

   C-152 1500 rpm
   C-172 1500 rpm
   C-172RG 15 In Hg

   e. Oil Pressure - in green
   f. Trim (Optional)
5. Maintain 0 rate of sink until 5 Kts above rotation speed
6. For C-172RG set rpm to 2500
7. Carb heat - ON
8. **Keep ball centered**
9. Reduce power

   C-152 1500 rpm
   C-172 1500 rpm
   C-172RG 15 In Hg
10. For retracting gear aircraft - Gear handle -DOWN airspeed is below Vlo/Vle (verify gear is down and locked)

- NOTE -
FOR DEPARTURE STALL LEAVE THE GEAR UP

11. At normal takeoff airspeed (C-152: 55 Kts,C-172: 70 Kts, C-172RG: 75Kts) Establish bank as directed - 20° standard - & clear
12. Power increase (C-152: Full, C-172: 2300rpm, C-172RG: 22 in Hg)
13. Increase pitch so airspeed will decrease no faster the one knots per second
14. Apply rudder as appropriate to **KEEP BALL CENTERED**
15. Maintain pitch until imminent or full stall as specified by the examiner.

NOTE -
For IMMINENT STALLS - Increase back pressure until stall horn sounds, or loss of control effectiveness. For FULL STALLS - Increase back pressure until aircraft nose drops

RECOVERY

1. Lower nose as necessary to break the stall
2. Power increase (C-152: full, C-172: full, C-172RG 25 in Hg)
3. Pitch for Vy attitude and level wings
4. Gear - UP after positive rate of climb (C-172RG only takeoff stall only)
5. Return to original altitude and perform cruise checklist

Completion Standards:

1. Recovers with minimal altitude loss
2. Maintains control of aircraft
3. Maintain heading with in 10° for straight ahead stall

Common Errors:

1. Improper approach speed - nose too high exaggerating
2. Raising the nose too fast
3. Staring blindly over the nose
4. Not keeping the ball centered through out the maneuver
5. Lowering nose before stall occurs
6. Wings not kept level (on straight ahead stall)
7. Not relaxing back pressure and entering secondary stall

MANEUVERING AT MINIMUM CONTROLLABLE AIRSPEED:

This maneuver demonstrates the flight characteristics and the amount of controllability that any particular aircraft will have at its minimum flying speed. Please take note - do not expect all aircraft of the same class (all C-152's, or all C-172's, etc.) to be just alike they will differ from individual airplane to airplane. This is one of the maneuvers that is excellent for "getting the feel of the airplane", and will approximate the configuration and condition that you will be in during the round out and landing portion of a soft field landing.

Objective: To recognize changes in the aircraft flight characteristics at critically slow airspeeds in various attitudes and configurations.

Content:

Establishing Minimum Controllable Airspeed

1. Select an altitude no lower than 1500 AGL
2. Perform clearing turns
3. Power change
   a. Fuel - On
   b. Mixture - Rich
   c. Carburetor heat on
   d. Reduce Power

C-152	1500 rpm
C-172	1500 rpm
C-172RG	15 In Hg

e. Oil Pressure - in green
f. Trim
4. Maintain 0 rate of sink on VSI
5. Allow airspeed to decrease to 5Kts above stall
6. Trim for stable flight
7. Set power as appropriate to maintain altitude
8. Lower flaps to 10°
9. Trim for stable flight
10. Adjust power as appropriate to maintain altitude
11. Lower flaps to 20°
12. Trim for stable flight
13. Adjust power as appropriate to maintain altitude
14. Lower flaps to 30°
15. Trim for stable flight

Maneuvering At Minimum Controllable Airspeed

1. Perform left/right turn 90°
2. Perform climb as directed
3. Perform descent/level off as directed

Recovery

1. Raise flaps to 20°
2. Adjust power as appropriate to maintain altitude
3. Trim for stable flight
4. Reduce power 100 RPM
   C-152 100 rpm
   C-172 100 rpm
   C-172RG 1 In Hg
5. Raise flaps to 10°
6. Trim for stable flight
7. Increase power
   C-152 100 rpm
   C-172 100 rpm
   C-172RG 1 In Hg
8. Raise flaps to 0°
9. Trim for stable flight
10. Apply cruise power smoothly
    a. Fuel - On
    b. Mixture - Rich
    c. Carburetor heat on
    d. Increase Power
   C-152 2300 rpm
   C-172 2300 rpm
   C-172RG 23 In Hg
    e. Oil Pressure - in green
    f. Trim
11. Lower nose to maintain altitude
12. Trim for stable flight

Completion Standards:

1. Maintain specified bank within 10°
2. Maintain altitude within 100 feet
3. Maintain heading within 10°
4. Maintain airspeed + 10 Kts - 0 Kts of stall speed

Common Errors:

1. Poor altitude control during transition
2. Heading problems during straight and level and climbs.
3. Stalling the aircraft
4. Excessive changes in airspeed during transition
5. Failure to maintain constant surveillance of area

CONSTANT ALTITUDE TURNS

The Constant Altitude turn is an excellent maneuver to help the pilot develop a fine control touch and analysis of the control functions. Through the pilot will learn to accurately maneuver the aircraft near its performance limits. Steep 720 degree turns aid in the devilment of proper coordination and accuracy in turning because the pilot must be

able to recognize the control pressures needed for the entry, execution, and recovery. The Constant Altitude turn is a steep turn with a bank of at least 45 degrees maintained through two complete turns (720 degrees).

Objective: Develop smoothness, coordination, division of attention and control techniques.

Content:

Establishing Turn

1. Select an altitude that will allow maneuver to be performed no lower than 1500 AGL
2. Maintain Airspeed at or below Maneuvering Speed
3. Perform clearing turns
4. Identify prominent landmark
5. Establish 45° bank
6. Increase power at 30° bank
    a. Fuel - On
    b. Mixture - Rich
    c. Carburetor heat on
    d. Increase power as bank increases
    e. Oil Pressure - in green
    f. Trim (Optional)
7. Apply appropriate back pressure just before 30° bank point

Recovery

1. Lead roll out by approximately 20°
2. Release back pressure
3. Call out point 45° before roll out
4. Roll to level at constant rate
5. Reduce power at wings level
    a. Fuel - On
    b. Mixture - Rich
    c. Carburetor heat on
    d. Power to 2300 RPM
    e. Oil Pressure - in green
    f. Trim
6. Maintain pitch control pressure for level flight

Completion Standards:

1. Maintain bank within 10° of 45°
2. Maintain altitude within 200 feet
3. Maintain airspeed within 10 Kts
4. Roll out on heading 10°

Common Errors:

1. Too much back pressure at beginning of the roll in
2. Improper throttle handling e.g. rough handling
3. Increasing pitch to bring up the nose alone
4. Failure to keep up with the check point
5. Letting the nose rise on roll out
6. Slipping or skidding throughout the turns

TURNS AROUND A POINT

The turn around a point is one of the basic training maneuvers that is used as a basis for several other maneuvers. For example the turns in the rectangular course are based on a turn around a point, as are the turns in the traffic pattern at the airports. The entire maneuver consists of making a 360 degree turn around a point while making a constant radius.

Objective: To demonstrate to student how to fly circle with constant radius and adjust for the effects of the wind during turns.

Content:

1. Climb to 800 feet AGL
2. Perform clearing turns
3. Identify point to use
4. Maintain low cruise power (95 Kts)
5. Enter pattern down wind
6. Abeam point initiate turn

- Note -

Rate of turn will normally not be constant but will increase or decrease depending on wind. Bank angles will be going to shallow on upwind turns and going to steep on downwind turns.

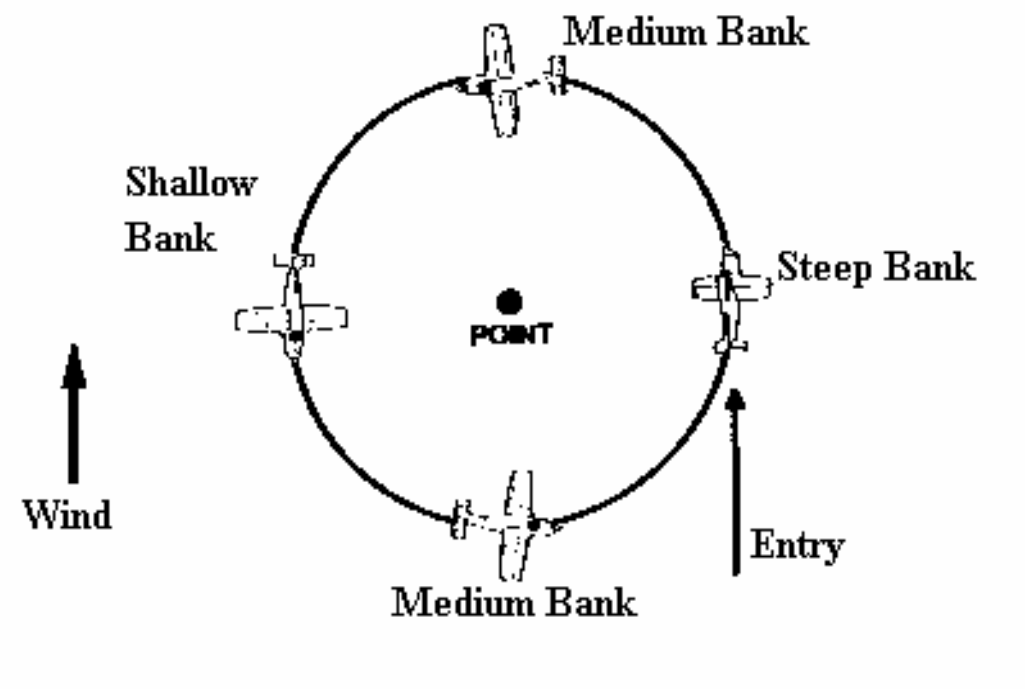
7. Roll to 45° bank
8. Apply slight back pressure on the down wind turn
9. Apply drift correction angle for wind on 90° point
10. Decrease bank angle slowly to minimum on up wind side
11. Reduce back pressure
12. As turn proceeds to downwind side increase bank steadily
13. Increase back pressure

Completion Standards:

1. Maintain altitude within 100 feet
2. Maintain airspeed within 10 Kts
3. Applies appropriate wind drift correction

Common Errors:

1. Poor crab correction - moving into or away from point
2. Not maintaining altitude
3. Poor bank control - not compensating for wind effects
4. Becoming fixed on the point and not looking around



RECTANGULAR COURSE:

The rectangular course maneuver is to simulate the traffic pattern at the airport. This maneuver will give the pilot a feel for the wind crab and the other corrections that will be necessary to follow the proper ground track. This maneuver can be entered with the wind from behind and opposite the turning point a slightly more that 1/4 turn around a point will be executed. The additional portion of the turn is required to compensate for the wind crab angle necessary. This turn will need to be a steep to medium banked turn. The wind correction will be applied

Objective: To familiarize the student with the effects of the wind during a traffic pattern.

Content:

1. Climb to 800 feet AGL
2. Perform clearing turns
3. Identify pattern to use - Determine winds and select a course boundaries which are approximately 1 mile in length and one of which is parallel to the wind.
4. Maintain low cruise power (Maintain 95 KIAS)
5. Enter pattern down wind applying drift correction and 1/4 to 1/2 mile from boundary
6. Abeam corner initiate turn

- Note -

Amount of turn will normally not be 90° but more or less than 90° depending on wind. Bank angles will be going to shallow on upwind turns and going to steep on downwind turns.

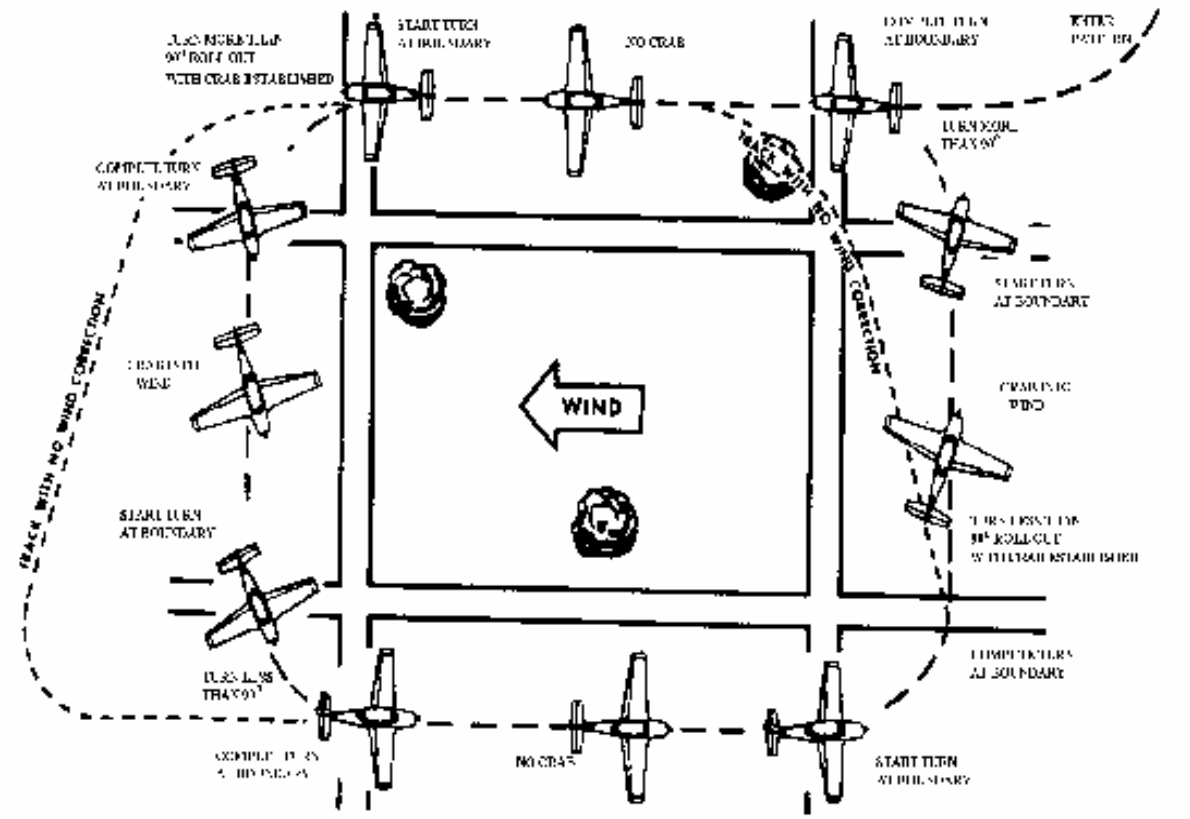
7. Maintain uniform distance the boundaries selected (use of the wing strut can help)
8. Apply appropriate back pressure
9. Apply appropriate drift correction angle for wind

Completion Standards:

1. Maintain altitude within 100 feet
2. Maintain airspeed within 10 Kts
3. Applies appropriate wind drift correction

Common Errors:

1. Poor crab correction - moving into or away from field
2. Not maintaining altitude
3. Losing the corner and forgetting to turn
4. Poor bank control in the turns - not compensating for wind
5. Becoming fixed on the field and not looking around



Rectangular Course

S TURNS ACROSS A ROAD

The s turn across a road is an adaptation of the turn around a point. This maneuver consists of alternating left and right turn around a point maneuvers with 180 degrees of turn. The s turn however will require a little additional effort in that the direction of the wind will be changing and that the points that you will be using will be changing.

Objective: To demonstrate to student how to fly circle with constant radius and adjust for the effects of the wind during turns with alternating directions.

Content:

1. Climb to 800 feet AGL
2. Perform clearing turns
3. Identify track to use
4. Maintain low cruise power (95 KIAS)
5. Enter pattern down wind
6. Abeam point initiate turn

- Note -

Rate of turn will normally not be constant but will increase or decrease depending on wind. Bank angles will be going to shallow on upwind turns and going to steep on downwind turns.

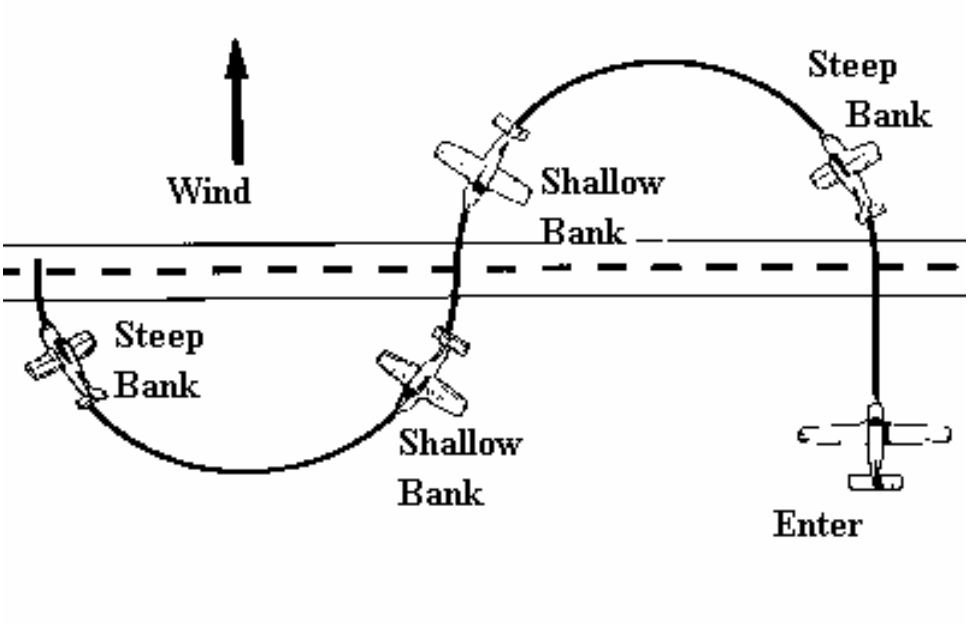
7. Roll to 45° bank
8. Apply slight back pressure on the down wind turn
9. Apply drift correction angle for wind on 90° point
10. Decrease bank angle slowly to minimum on up wind side
11. Reduce back pressure
12. As turn proceeds to downwind side increase bank steadily
13. Increase back pressure

Completion Standards:

1. Maintain altitude within 100 feet
2. Maintain airspeed within 10 Kts
3. Applies appropriate wind drift correction

Common Errors:

1. Poor crab correction - moving into or away from point
2. Not maintaining altitude
3. Poor bank control - not compensating for wind effects
4. Becoming fixed on the point and not looking around



EIGHTS ACROSS A ROAD:

The Eight's across a road is similar to the eight's along a road and uses a combination of the techniques learned in the rectangular patter and the turn around a point. The maneuver consists of two turns around a point (of approximately 200 degrees) and a brief portion of level flight (3-5 seconds) between the opposite tangent points of the turns. This maneuver requires additional planning than the rectangular pattern or the turn around a point in that addition effort will be necessary to have the crossing points of the straight portions cross at the same point each time.

Objective: To develop control coordination for turning while adjusting for winds and other flight conditions.

Content:

1. Determine winds and select a suitable reference line perpendicular to the wind
2. Enter from upwind side (wind at your back), perpendicular to the selected reference line
3. Maintain 95 KIAS and 800 AGL
4. Maintain constant radius turns (not to exceed 45° bank) on each side of reference line, and plan rollout to be straight and level directly over and perpendicular to the reference line.

Content:

1. Climb to 800 feet AGL
2. Perform clearing turns
3. Identify track to use
4. Maintain low cruise power (95 KIAS)
5. Enter pattern down wind
6. Abeam point initiate turn

- Note -

Rate of turn will normally not be constant but will increase or decrease depending on wind. Bank angles will be going to shallow on upwind turns and going to steep on downwind turns.

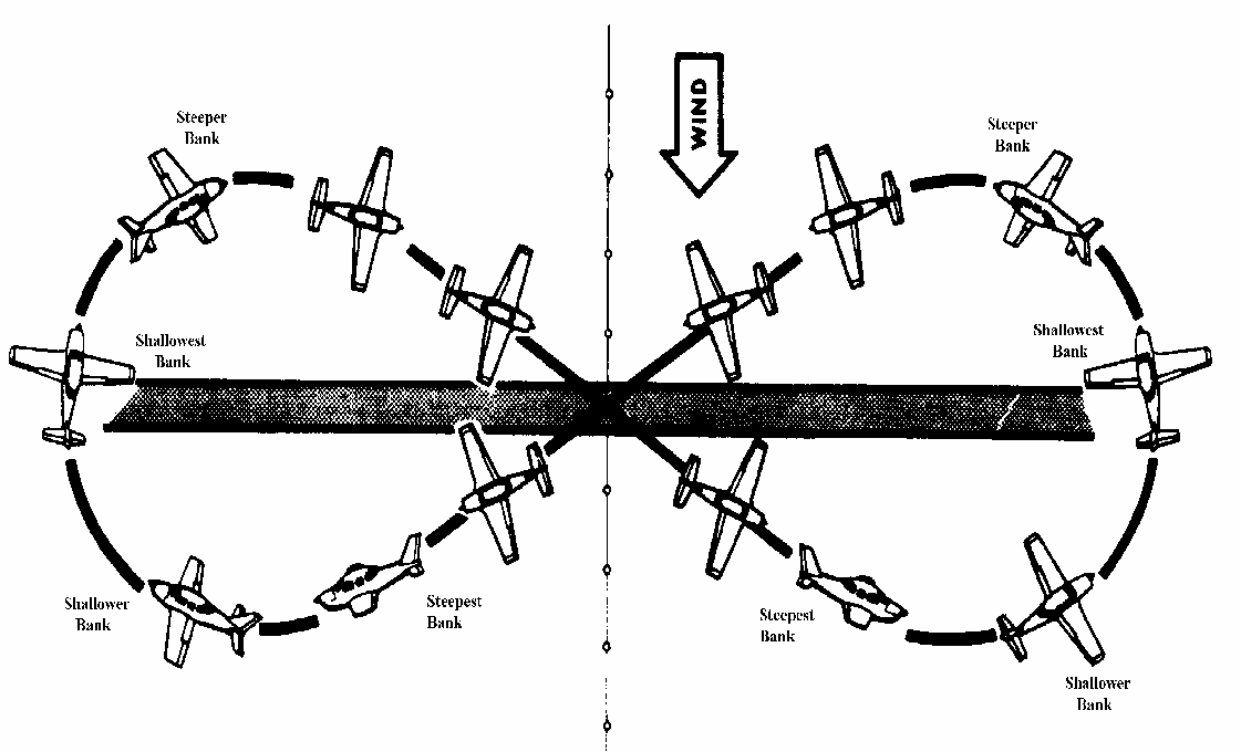
7. Roll to 45° bank
8. Apply slight back pressure on the down wind turn
9. Apply drift correction angle for wind on 90° point
10. Decrease bank angle slowly to minimum on up wind side
11. Reduce back pressure
12. As turn proceeds to downwind side increase bank steadily
13. Increase back pressure
14. Roll through wings level over the road and directly into turn in the opposite direction

Completion Standards:

1. Maintain altitude within 100 feet
2. Maintain airspeed within 10 Kts
3. Applies appropriate wind drift correction

Common Errors:

1. Poor crab correction - moving into or away from point
2. Not maintaining altitude
3. Poor bank control - not compensating for wind effects
4. Becoming fixed on the point and not looking around



EIGHTS ALONG A ROAD:

This maneuver is an adaptation of the turn around a point and consists of one turn around a point to the left followed by a turn around a point the opposite direction. The circles tracked over the ground will touch at one point. Like the s turn, the eight's along a road will require a little additional effort in that the direction of the wind will be changing and that the points that you will be using will be changing, and additional planning will be necessary to have a point on the circles touch each other.

Objective: To develop control coordination for turning while adjusting for winds and other flight conditions.

Content:

1. Determine winds and select a suitable reference line perpendicular to the wind
2. Enter from upwind side (wind at your back), perpendicular to the selected reference line
3. Maintain 95 KIAS and 800 AGL
4. Maintain constant radius turns (not to exceed 45° bank) on each side of reference line, and plan rollout to be straight and level directly over and perpendicular to the reference line.

Content:

1. Climb to 800 feet AGL
2. Perform clearing turns
3. Identify track to use
4. Maintain low cruise power (95 KIAS)
5. Enter pattern down wind
6. Abeam point initiate turn

- Note -

Rate of turn will normally not be constant but will increase or decrease depending on wind. Bank angles will be going to shallow on upwind turns and going to steep on downwind turns.

7. Roll to 45° bank
8. Apply slight back pressure on the down wind turn

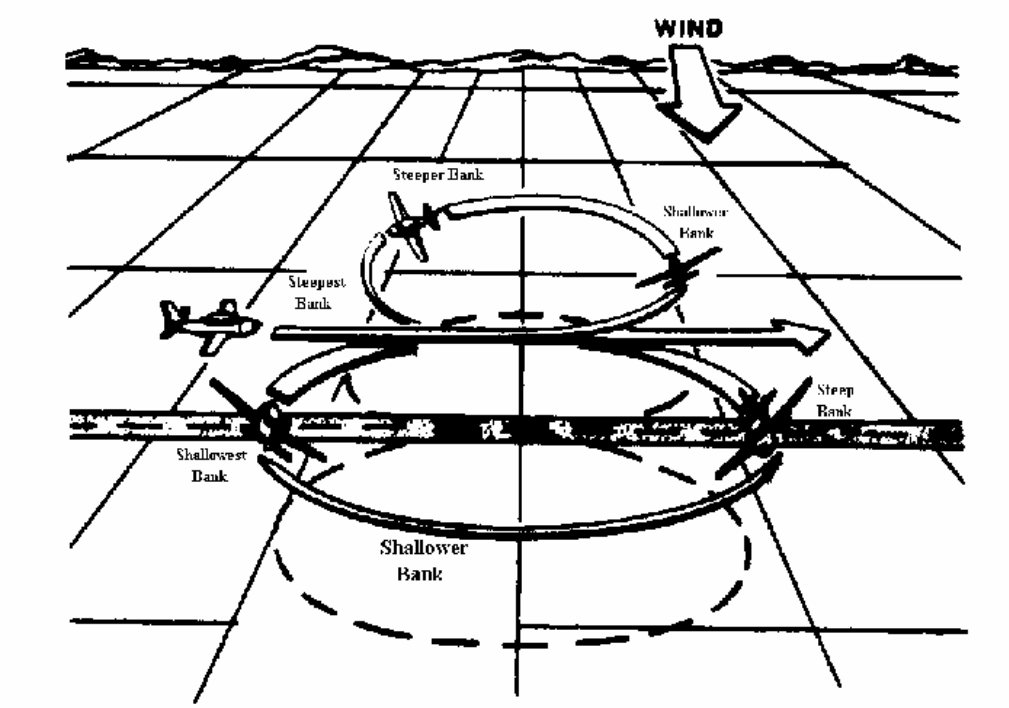
9. Apply drift correction angle for wind on 90° point
10. Decrease bank angle slowly to minimum on up wind side
11. Reduce back pressure
12. As turn proceeds to downwind side increase bank steadily
13. Increase back pressure
14. Roll through wings level over the road and directly into turn in the opposite direction

Completion Standards:

1. Maintain altitude within 100 feet
2. Maintain airspeed within 10 Kts
3. Applies appropriate wind drift correction

Common Errors:

1. Poor crab correction - moving into or away from point
2. Not maintaining altitude
3. Poor bank control - not compensating for wind effects
4. Becoming fixed on the point and not looking around



Eights Along A Road

EMERGENCY APPROACH AND LANDING (SIMULATED)

All steps listed are accomplished only if time and altitude permit.

In spite of the remarkable increased reliability of the present day engines and systems, he pilot must always be prepared for the event of the emergency to include the emergency landing. This procedure is taught to insure the pilot has the maximum chances of not being hurt or hurting the aircraft. This is one of the few procedures that is life saving therefore it must be taken very seriously and a certain level of proficiency must be maintained.

Objective: To teach student proper method for executing an engine out/failure procedure

Content:

1. Carb heat on, throttle to 1000 rpm to simulate engine failure
2. Wings level, flaps up, establish Vg
3. Select and fly to a suitable landing area
4. Attempt engine restart:
    a. Fuel on
    b. Mixture rich
    c. Throttle 1 inch open
    d. Carb heat on
    e. Magnetos both (try left or right)
    f. Master on
    g. Primer in and locked
    h. Starter engage
5. Transponder 7700
6. Initiate MAYDAY on current frequency in use or 121.5

- NOTE -

Give aircraft ID number, location, number of persons on board,
and nature of emergency if time permits

7. Continue descent and plan flight pattern to selected area considering altitude, wind, obstacles, size of field, and other factors
8. Secure failed engine - fuel selector off, mixture idle cutoff, throttle close, magnetos off

- NOTE -

STEP 8 IS ONLY SIMULATED NOT ACTUALLY DONE EXCEPT IN A
REAL EMERGENCY

9. After assured of making selected area, extend flaps
10. On short final
    a. Master off
    b. Throttle closed
    c. Fuel Off
    d. Doors open
    e. Time permitting place prop in horizontal position
11. Touch down with nose high attitude

- Note -

STEP 11 NOT ACTUALLY DONE EXCEPT IN A REAL EMERGENCY,
DON'T GO BELOW 200 FT

Completion Standards:

1. Select a field with appropriate obstacle clearances and appropriate for the winds
2. Maintain Vg $\pm$ 10 KIAS

Common Errors:

1. Selecting an inappropriate field (winds, obstacles)
2. Poor airspeed control
3. Uncorrected drift
4. Improper runway alignment
5. Misjudging aircraft float resulting in a long landing

NORMAL AND CROSSWIND APPROACH AND LANDING

This procedure involves what is considered “normal” situation in that the power from the engine is available to the pilot, that there are no obstacles, and the landing surface is firm and of a sufficient length to gradually bring the aircraft to a stop. The crosswind portion of this procedure includes the factor for the difference in the wind direction and in the direction runway (which always seems to happen). The crosswind landing is some what more difficult to

perform than the crass wind takeoff because of problems involved in the aircraft's speed decreasing rather than increasing.

Objective: To teach the student proper approach and landing techniques for airport operations.

Content:

1. Enter and fly traffic pattern as per standard procedures
2. Complete before landing checklist
3. Execute a normal traffic patters
   a. Mid field carb heat on
   b. Abeam of touchdown point power to 1500 rpm
   c. Airspeed reduce to appropriate
      C-152 70 KIAS
      C-172 80 KIAS

3. Turn base when intended point of touchdown is approximately 45° behind wing (Also be sure you have a clearance to land or a sequence as to who you are going to follow)

4. Extend flaps to 20° when altitude permits
5. Reduce airspeed to 65 KIAS
   C-152 65 KIAS
   C-172 70 KIAS

6. Turn final and maintain proper ground track (consider the direction of the wind to avoid overshooting the runway). For crosswinds use the ailerons to maintain your position on the centerline and the rudder to maintain alignment of the landing gear to the runway direction

7. Extend flaps to 30° if altitude permits (For strong crosswinds leave flaps at 20)
8. Airspeed reduce to appropriate
   C-152 55 KIAS
   C-172 62 KIAS

- Note -

For crosswind days airspeed above +5 KIAS; for gusting condition add 1/2 the gust factor to your final speed

9. Transition from approach to landing attitude approximately 10 to 15 feet above the runway by applying elevator back pressure and crosswind correction as necessary

10. Maintain directional control during after-landing roll by increasing aileron deflection into the wind as necessary

Completion Standards:

Common Errors:

1. Poor airspeed control
2. Uncorrected drift
3. Improper runway alignment

SOFT-FIELD APPROACH AND LANDING

The soft field landing assumes the runway surface is covered with snow, mud, high grass, loose rocks or that the surface is rough. The objective of this landing is to support the weight of the aircraft with the wings as long as possible during the landing roll and delay the weight transfer to the wheels during the roll-out until the aircraft attains the slowest possible speed.

Objective: To teach the students the proper method for performing a soft field landing.

Content:

1. Enter and fly traffic pattern as per standard procedures
2. Complete before landing checklist
3. Execute a normal traffic patters
   a. Mid field carb heat on
   b. Abeam of touchdown point power to 1500 rpm
   c. Airspeed reduce to appropriate
      C-152 70 KIAS
      C-172 80 KIAS
4. Turn base when the intended point of touchdown is approximately 45° behind the wing
5. Extend flaps to 20 if altitude permits
6. Turn to final and maintain proper ground track
7. Extend flaps to full once altitude permits
8. Reduce airspeed per the pilots operating handbook
   C-152 KIAS
   C-172 KIAS
9. Maintain approx. 100-200 rpm over idle during landing
10. Transition from approach to landing attitude approximately 10 to 15 feet above runway by applying back pressure and crosswind correction as necessary
11. Touchdown smoothly at minimum descent rate and ground speed with no appreciable drift and airplane's longitudinal axis aligned with runway centerline
12. Hold nose wheel off landing surface as long as possible by applying elevator back pressure
13. Maintain sufficient power and apply full back elevator pressure while taxing on soft surface

Completion Standards:

1. Touch down with minimal airspeed
2. Maintain Approach Airspeed ±5 Kts.

Common Errors:

1. Poor airspeed control
2. Uncorrected drift
3. Improper runway alignment
4. Landing short or long from misjudgment of headwind component or improper glide path

SHORT-FIELD APPROACH AND LANDING:

A successful short-field landing over an obstacle begins with GOOD planning. In order to achieve a landing roll that is as short as possible, it is desirable to touch down at a minimum airspeed as close to the obstacle as possible. This means clearing the obstacle by a minimum amount at a high rate of decent and at a slow airspeed.

Objective: To demonstrate to student how to execute a landing with a minimal ground run.

Content:

1. Enter and fly traffic pattern per standard procedure
2. Complete before landing checklist
3. Execute a normal traffic patters
   a. Mid field carb heat on
   b. Abeam of touchdown point power to 1500 rpm
   c. reduce airspeed appropriate for the aircraft
4. Turn base when intended point of touchdown is approximately 45° behind the wing.
5. Extend flaps to 20°, if altitude permits

6. Maintain airspeed appropriate for the aircraft
7. Turn final and maintain proper ground track
8. Extend flaps to 30°
9. Reduce airspeed on short final to pilots operating handbook recommended speeds
10. Reduce power slowly to idle when clearing obstacles
11. Transition from approach to landing attitude approximately 10 to 15 feet above runway by apply back elevator pressure and crosswind correction as necessary
12. Touchdown down at or 200 ft beyond intended touchdown point with minimum float and no appreciable drift with the aircraft's longitudinal axis aligned with the runway
13. Complete landing phase
    a. Lower nose
    b. Apply even and firm brake pressure
    c. Raise the flaps
    d. Yoke aft as the aircraft decelerates

Completion Standards:

1. Touchdown down at or 200 ft beyond intended touchdown point with minimum float and no appreciable drift with the aircraft's longitudinal axis aligned with the runway
2. Airspeed ±5 Kts.

Common Errors:

1. Poor airspeed control
2. Uncorrected drift
3. Improper runway alignment
4. Misjudging aircraft float resulting in a long landing

FORWARD SLIPS TO LANDING:

The sole purpose of the foreword slip to a landing is to loose altitude. To execute it properly, full application of the selected rudder and the opposite amount of aileron will be used to maintain a straight ground track. In the performance of this maneuver you will be in a cross controlled condition and there control of the angle of attack is extremely important.

Objective: To train the student procedure for loosing altitude rapidly to return to a proper glide path.

Content:

1. Complete before landing checklist
2. Maintain pattern altitude during the base and beginning portion of the final segment
3. At mid base reduce power to 1500 rpm
4. Reduce airspeed to recommended airspeed
5. On final power to idle
6. Establish forward slip by simultaneously lowering a wing into the wind and applying full opposite rudder.
7. Adjust pitch and amount of slip as necessary to maintain proper attitude, descent angle, and directional control
8. Transition from slip to a normal approach approximately 50 feet above the runway
9. Transition from approach to landing attitude approximately 10 to 15 feet above the runway by applying increasing back pressure on the elevator

Completion Standards:

Common Errors:

1. Adjust glide path by adjusting airspeed

GO-AROUND FROM A REJECTED LANDING:

Objective: To teach students method to properly execute a balked landing.

Content:

1 Apply full power, carb heat in
2. Adjust pitch to a Vy attitude
3. Flaps to 20° (only if currently in a greater setting than 20°, otherwise no flap adjust is made)
4. Establish a positive rate of climb
5. Flaps slowly up to 10°
6. If obstacles present climb at Vx and appropriate degrees of flaps
7. Once obstacles are cleared
    a. lower nose slightly
    b. build airspeed to at least Vy
    c. flaps to 5° slowly
    d. Flaps up slowly .

Completion Standards:

Common Errors:

COMMERCIAL PILOT MANEUVERS

STEEP POWER TURNS

The steep power turn is an excellent maneuver to help the pilot develop a fine control touch and analysis of the control functions. Through the pilot will learn to accurately maneuver the aircraft near its performance limits. Steep 720 degree turns aid in the devilment of proper coordination and accuracy in turning because the pilot must be able to recognize the control pressures needed for the entry, execution, and recovery.

The steep power turn is a steep turn with a bank of at least 50 degrees maintained through two complete turns (720 degrees). This maneuver is similar to the constant altitude turn that is required of the private pilot, but is performed at a steeper bank and the tolerances are tighter for the commercial pilot.

Objective: Develop smoothness, coordination, division of attention and control techniques at the commercial level.

Content:

1. Select an altitude no lower than 1500 AGL.
2. Clear the area for traffic
3. Pre-Maneuver Checks

fuel	on both
cowl flaps	closed (check cylinder temp first)
mixture	rich
carb heat	off
oil pressure	green

4. Establish entry airspeed

C-152	95 KIAS	2300 rpm
C-172	95 KIAS	2300 rpm
C-172RG	106 KIAS	2500 rpm/18 In Hg

5. Select prominent landmark off nose of aircraft and note heading on DG
6. Roll smoothly into a 50° bank, start adding back pressure and power (4 In Hg or 200 rpm) when passing through 30° of bank in order to maintain airspeed.
7. Note the position of the nose cowling with reference to the horizon in order to maintain entry altitude and desired bank angle
8. Start rollout approximately half the bank angle (25°) prior to the heading the maneuver began at in order to complete a 360° turn.
9. When rolling out of turn release elevator back pressure in order to prevent the nose from rising and reduce power back to original setting.
10. Clear and enter a turn in the opposite direction if instructed to do so. (Remember that the appearance of the nose cowling in reference to the horizon look different between a turn to the left and a turn to the right.)

Completion Standards:

1. Roll out on 360° ± 10°
2. Airspeed ± 10 KIAS
3. Altitude ± 100 feet
4. Bank 50° ± 5°

Common Errors:

1. Disorientation
2. Over/Under Banking
3. Failure to establish pitch attitude appropriate
4. Poor coordination
5. Poor airspeed control

6. Failure to continue to scan area for traffic

CHANDELLS

The pilot will develop a high degree of coordination, planning, control feel, and speed sensing while learning to perform the chandelle accurately. The chandelle aids the pilot in learning the relationship between control pressures and aircraft attitudes. The chandelle is a maximum performance climbing turn of 180 degrees. Throughout the maneuver, the aircraft speed is smoothly adjusted from the entry speed to five knots above stall by controlling the pitch attitude.

Objective: Teaches the student to maintain coordinated flight through a wide range of pitch and bank attitudes.

Content:

1. Select an altitude at least 1500 AGL
2. Clear the area for traffic
3. Pre-maneuver check

fuel	on both
mixture	rich
oil pressure	in green
cowl flaps	open

4. Power set

C-152	2300 rpm
C-172	2300 rpm
C-172RG	2300 rpm/18 In Hg

5. Select prominent landmark and position off the wing in the direction of turn and note heading indicator.
6. Roll level into a 30° bank
7. Smoothly, add slight pitch and power

C-172	Full power
C-172RG	22 In Hg

8. Apply proper pitch to maintain coordinated climbing turn and a constant 30° bank until 90° point (reference is off the nose)

9. Second half of turn maintain constant pitch with decreasing bank approx. 1° for every 3° of heading change (this will require an increasing amount of elevator movement since the airspeed is decreasing through out the maneuver, Furthermore more right rudder will be needed in order to counteract the effects of P-factor)

10. The first stall warning horn should come on 20° prior to the 180° point. The second stall horn should come on at the 180° point (the reference point will be off the opposite wing)

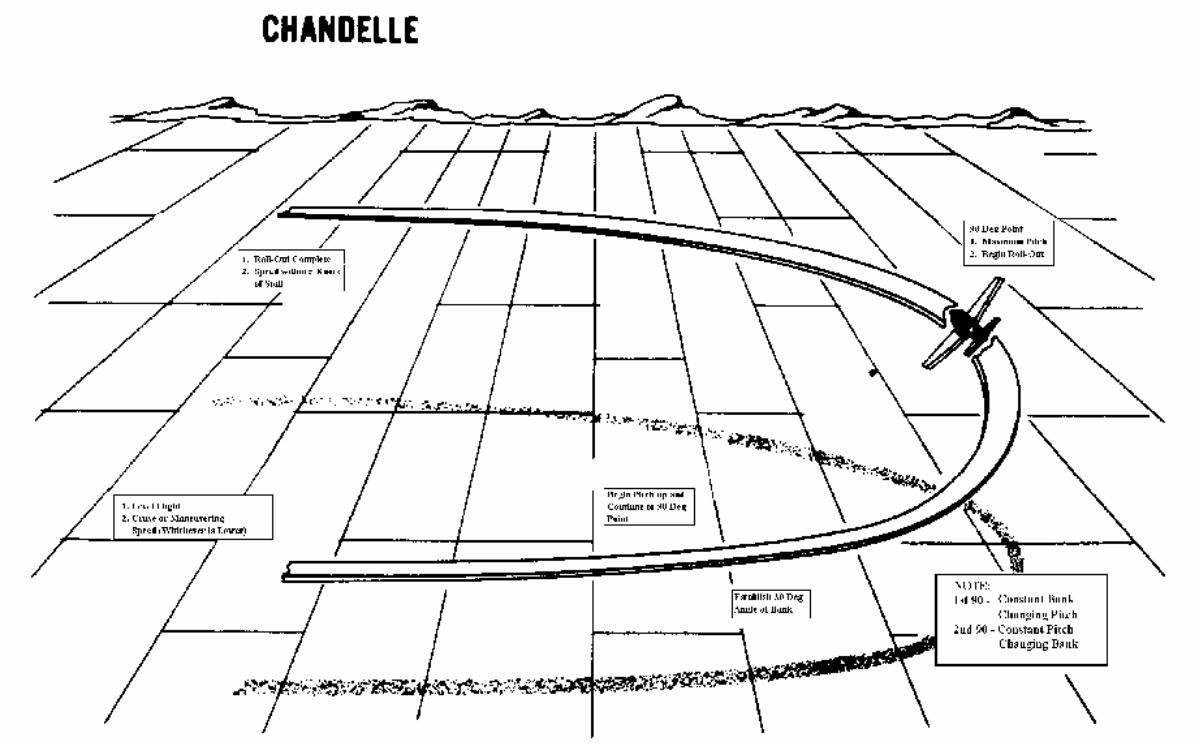
11. Hold heading and attitude for approx. 3 sec.
12. Resume straight and level with a minimum loss of altitude
13. Run cruise check list

Completion Standards:

1. Heading at 180° point ± 10°
2. Airspeed within 5 Kts of stall

Common Errors:

1. Poor correction for wind
2. Poor coordination
3. Poor airspeed control
4. Failure to continue to scan area for traffic



LAZY EIGHTS

The lazy eight is a training maneuver that combine dives, climbs, turns, and various combinations of each. Through this maneuver the pilot continues to develop their coordination, speed sense, and the feel of the aircraft.

During lazy eight's, control pressures are constantly changing, necessitating careful advance planning of control usage to perform the maneuver well. Because of this constant control pressure change, the lazy eight can not be done mechanically or automatically. The flight path of an aircraft performing a lazy eight is illustrated below and will result in the aircraft never being held at one constant attitude.

Objective: teaches the student coordinated controls through a wide range of control pressures.

Content:

1. Select an altitude that will allow the maneuver to be performed no lower the 1500 AGL.
2. Determine the wind direction and plan turns into the wind
3. Complete clearing turns in the direction of maneuver.
4. Complete Pre-Maneuver checks:

Fuel	On
Cowl Flap	Open
Mixture	Rich
Carb Heat	Off
Oil pressure	in green

5. Establish the recommended power and entry speed

C-152	2100rpm/97 KIAS
C-172	2200rpm/105 KIAS
C-172RG	2200rpm/106 KIAS

6. Enter the maneuver x-wind and make the turns into the wind to keep yourself in the same general location
7. Entry to 45: increase pitch, increase bank

   45: bank approx. 15° and highest pitch

45 to 90: continue to increase bank, decrease pitch

90: bank approx. 30°, 0 pitch, first indication of stall warning horn

90 to 135: decrease bank and pitch

135: bank approx. 15° and maximum pitch down

135 to 180: decrease bank slowly and increase pitch

180: level flight, entry airspeed and altitude.

8. Repeat step 7 in the opposite direction

- Note -

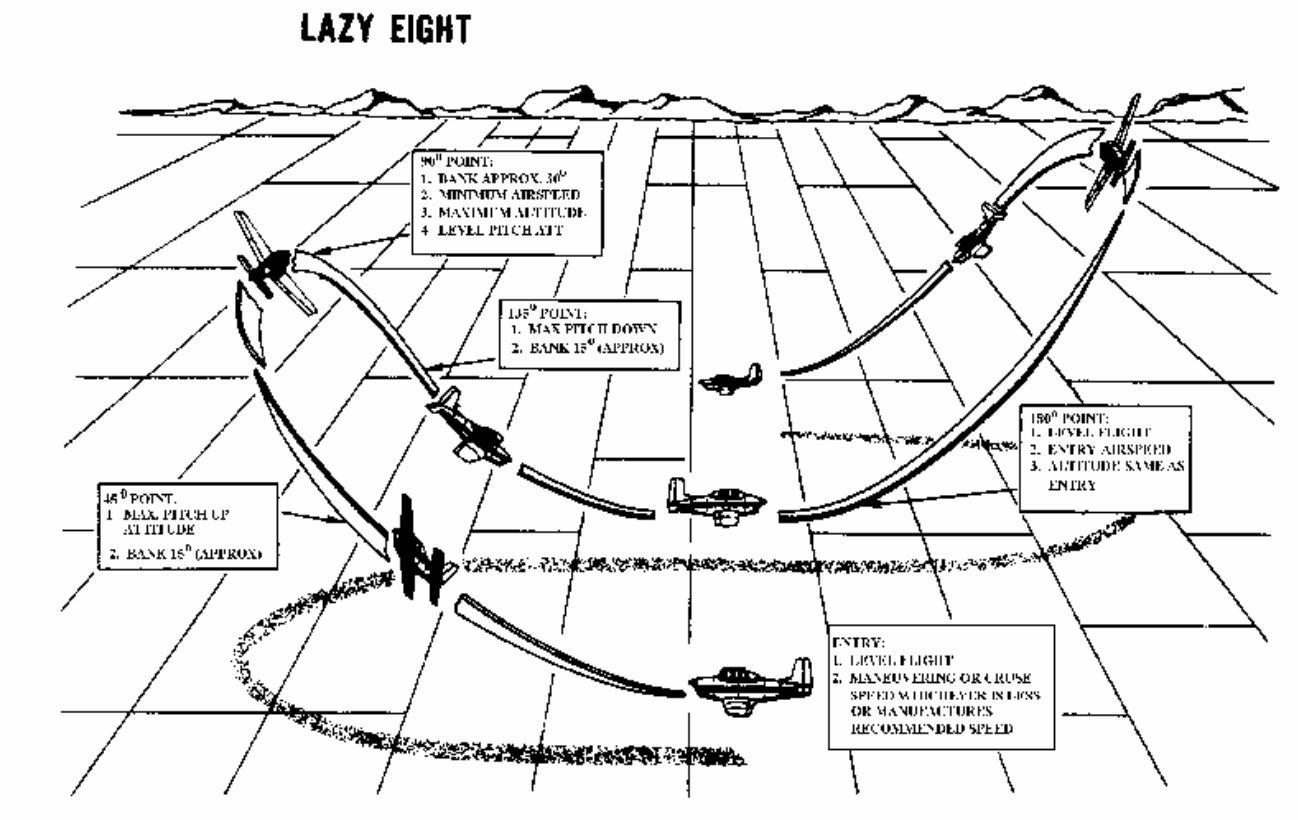
THIS MANEUVER SHOULD BE PERFORMED WITHOUT CHANGES TO THE TRIM SETTING. THE AIRSPEED CAN BE GREATER AT THE 90° POINT IF METEOROLOGICAL CONDITIONS DICTATE.

Completion Standards:

1. Maintains consistant change of pitch and roll rates
2. Altitude at 90° points ± 100 Feet
3. Altitude at 180° points ± 100 Feet
4. Airspeed at 90° points ± 100 Feet
5. Airspeed at 90° points ± 100 Feet
6. Heading at 90° points ± 10°

Common Errors:

1. Inadequate pitch up for entry
2. Inadequate pitch input at 135° point
3. Poor coordination
4. Poor airspeed control
5. Failure to continue to scan area for traffic
6. Improper planning leading to loop peaks and valleys not being at the 90 and 270 points
7. un symmetrical loops
8. Excessive Bank (Exceeds 30 Degrees at steepest point)



STEEP SPIRALS

Steep spirals teach coordination, planning, precise speed control, and avoidance of disorientation. Although steep spirals are learned as a coordination exercise, it also has several practical aspects. The steep spiral provides an excellent way to make an approach for an emergency landing. By practicing this maneuver, the pilot improves their orientation under difficult situations. In addition, because precise airspeed control is one of the most important elements in this exercise, the pilot will develop an ability to control speed which will then carry over into other aspect of flying.

Objective: To improve pilot techniques for power off turns, wind drift control, planning, orientation and division of attention.

Content:

Establishing position

1. Select an altitude that will allow at least 3 complete turns with sufficient altitude to execute a safe approach to landing.
2. Select suitable ground reference point and clear the area
3. Pre-Maneuver Checks:

Fuel selector	ON
Cowl Flap	Closed
Mixture	RICH
Carb Heat	ON
Engine Instruments	CHECK

4. Clear area
5. Identify pivotal object
6. Establish downwind

7. Carburetor heat to on
8. Reduce power

C-152	1000 rpm
C-172	1000 rpm
C-172RG	2300 rpm/15 In Hg

   e. Oil Pressure - in green
   f. Trim as necessary
9. Maintain 0 rate of sink
10. Establish best glide speed

C-152	60 KIAS
C-172	65 KIAS
C-172RG	70 KIAS

11. Establish 45° bank
12. Maintain airspeed at 150 percent above stalling speed
13. Maintain position above pivotal object as in turns around a point
14. Clear engine ounce per 360° (3 seconds)
15. Continue Descent to 1500 feet AGL
16. Bank Angle - as necessary to maintain a constant distance from reference point with 50° to 55° of bank at the steepest point usually on the downwind.

Recovery

1. Bank to level
2. Establish level attitude
3. Increase power to cruise
   a. Fuel - On
   b. Mixture - Rich
   c. Carburetor heat off
   d. Power to 2300 RPM
   e. Oil Pressure - in green
   f. Trim

Completion Standards:

1. Bank within 10° of 45° at steepest point
2. Airspeed within 10 Kts of desired airspeed

Common Errors:

1. Poor correction for wind
2. Poor coordination
3. Poor pitch control
4. Failure to continue to scan area for traffic

EIGHTS ON PYLONS

This training maneuver involves flying the aircraft in alternating left and right circular paths in the form of an 8 over the ground. In this case though there is no attempt to make constant radius circles around the pylons. The airplane is flown at an altitude and airspeed that a line parallel to the airplane's lateral axis from the pilots eye appears to pivot on each of the pylons. This is an advanced training maneuver that provides practice in developing coordination skills while the pilots attention is directed at maintaining a pivotal position on a selected pylon. A practical use for this maneuver is for photographing a ground objects with a camera fixed to the airframe.

Objective: To develop control coordination for turning while adjusting for varying wind and control pressures.

Content:

1. Establish pivotal altitude
2. Clear the area for traffic
3. Pre-maneuver check

fuel	on both
mixture	rich
oil pressure	in green
cowl flaps	open

4. Power set

C-152	2300 rpm
C-172	2300 rpm
C-172RG	2300 rpm/18 In Hg

5. Select fixed pivotal point
6. Enter downwind to the pylon at a 40° angle
7. When the pylon is off the lateral axis of the airplane establish a 30° bank
8. Adjust the altitude as necessary to keep the pylon centered on the wing.

- Note -

Point may move up and down the line but not fore and aft - follow the point with the yoke e.g. point goes forward yoke goes forward.

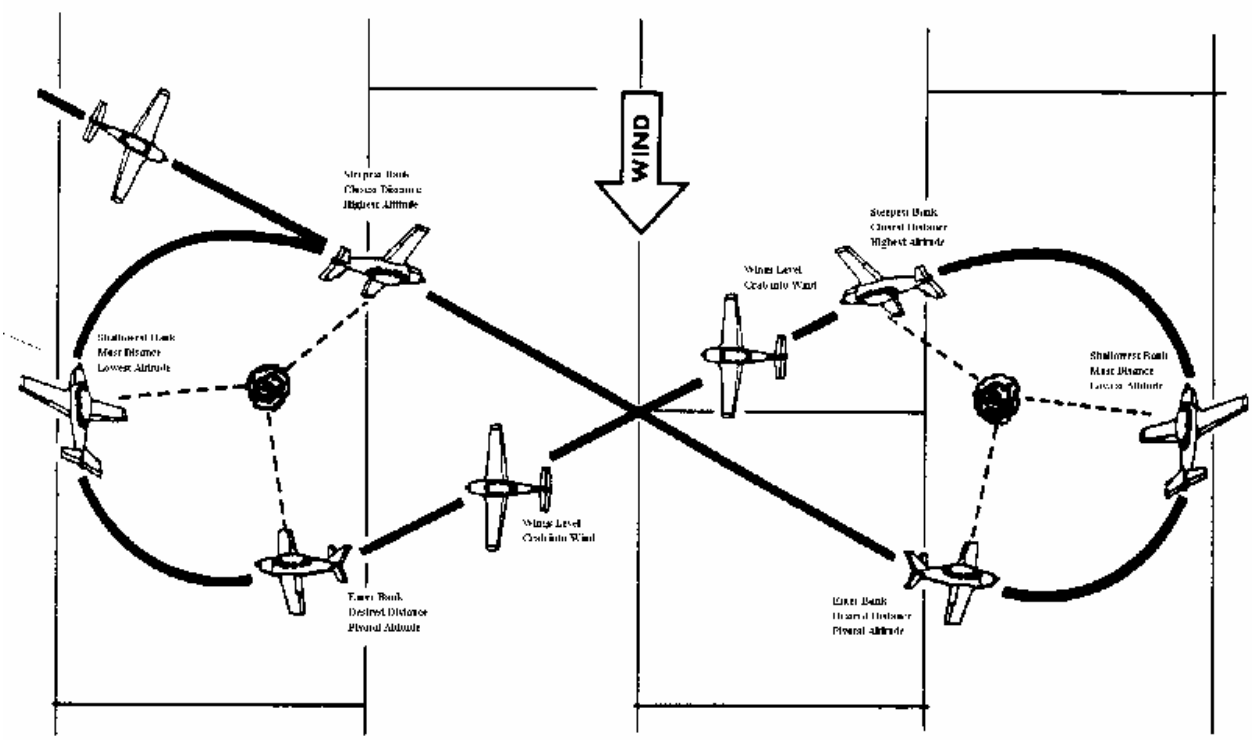
9. Roll to level at 90° to the entry line.
10. Count to 5
11. Establish 30° bank in opposite direction
12. Repeat steps 8 and 9
13. Repeat the pattern as instructed by the examiner/instructor

Completion Standards:

1. Bank 30° to 40° at steepest point

Common Errors:

1. Loosing pylon points
2. Rough control inputs and over controlling
3. Not using proper line of sight references
4. Slipping or Skidding



Eights-On-Pylons

EIGHTS AROUND PYLONS

The Eight's around pylons maneuver is similar to the eight's along a road and uses a combination of the techniques learned in the rectangular patter and the turn around a point. The maneuver consists of two turns around a point (of approximately 240 degrees). In this maneuver the aircraft is rolled from one turn and only momentarily passes through level flight. This maneuver requires additional planning than the rectangular pattern or the turn around a point in that addition effort will be necessary to have the crossing points of the straight portions cross at the same point each time.

Objective: To improve pilot techniques for power off turns, wind drift control, planning, orientation and division of attention.

Content:

Establishing position

1. Select suitable ground reference point and clear the area with wind off the wing
2. Pre-Maneuver Checks:

Fuel selector	ON
Cowl Flap	Closed
Mixture	RICH
Carb Heat	ON
Engine Instruments	CHECK

3. Clear area
4. Maintain 800 feet AGL
5. Identify pivotal objects and road or objects for base reference
6. Bank Angle - as necessary to maintain a constant distance from reference point with 50° to 55° of bank at the steepest point usually on the downwind.

7. Maintain low cruise power (95 Kts)
8. Enter pattern cross wind
9. Abeam point initiate 45° bank

- Note -

Rate of turn will normally not be constant but will increase or decrease depending on wind. Bank angles will be going to shallow on upwind turns and going to steep on downwind turns.

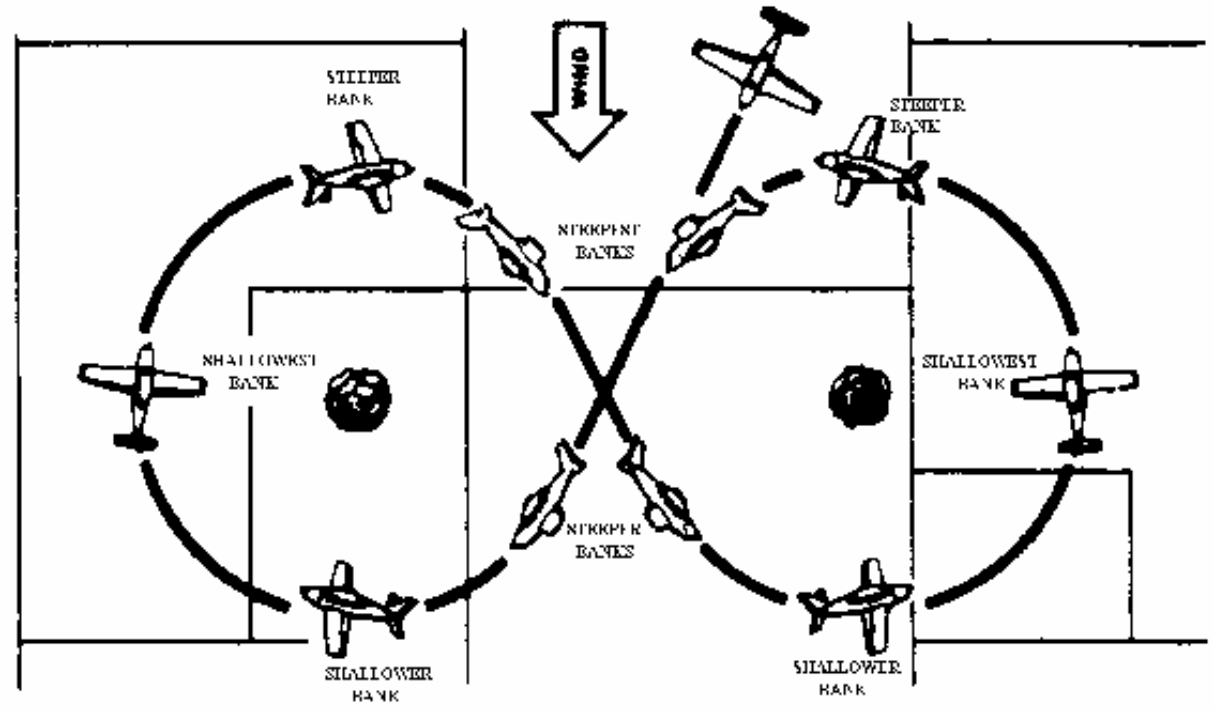
10. Bank to 45° bank
11. Apply slight back pressure on the down wind turn
12. Apply drift correction angle for wind at 90° to the wind
13. Decrease bank angle slowly to minimum on up wind side
14. Reduce back pressure
15. As turn proceeds to downwind side increase bank steadily
16. Increase back pressure
17. Perform the above steps in the opposite direction of turn

Completion Standards:

1. Maintain altitude within ±100 feet
2. Maintain airspeed within ±10 Kts
3. Applies appropriate wind drift correction

Common Errors:

1. Poor crab correction - moving into or away from point
2. Not maintaining altitude
3. Poor bank control - not compensating for wind effects
4. Becoming fixed on the point and not looking around
5. Bank within 10° of 45° at steepest point
6. Airspeed within 10 Kts of desired airspeed
8. Poor coordination
9. Poor pitch control
10. Failure to continue to scan area for traffic



Eights Around Pylons

MAXIMUM PERFORMANCE APPROACH AND LANDINGS

Through the accuracy landing, the pilot learns the technique of landing their aircraft when, where, and how they chose. s the pilot develops the ability to make accuracy landings, they will find that techniques learned in this maneuver will be carried over to the everyday flying. The accuracy landing, sometimes called a spot or precision landing, also may me used in case of an emergency requiring a landing at other than an airport. Should the situation arise, the pilot who is proficient in this maneuver will be prepared to make a safe, smooth, accurate landing under emergency conditions.

Objective: To demonstrate to student how to execute a landing with a minimal ground run.

Content:

1. Enter and fly traffic pattern per standard procedure
2. Complete before landing checklist
3. Execute a normal traffic patters
   a. Mid field carb heat on
   b. Abeam of touchdown point power to 1500 rpm
   c. reduce airspeed appropriate for the aircraft
4. Turn base when intended point of touchdown is approximately 45° behind the wing.
5. Extend flaps to 20°, if altitude permits
6. Maintain airspeed appropriate for the aircraft
7. Turn final and maintain proper ground track
8. Extend flaps to full
9. Reduce airspeed on short final to pilots operating handbook recommended speeds
10. Reduce power slowly to idle when clearing obstacles
11. Transition from approach to landing attitude approximately 10 to 15 feet above runway by apply back elevator pressure and crosswind correction as necessary

12. Touchdown down at or 100 ft beyond intended touchdown point with minimum float and no appreciable drift with the aircraft's longitudinal axis aligned with the runway

13. Complete landing phase
    a. Lower nose
    b. Apply even and firm brake pressure
    c. Raise the flaps
    d. Yoke aft as the aircraft decelerates

Completion Standards:

1. Touchdown down at or 100 ft beyond intended touchdown point with minimum float and no appreciable drift with the aircraft's longitudinal axis aligned with the runway

2. Airspeed ±5 Kts.

Common Errors:

1. Poor airspeed control
2. Uncorrected drift
3. Improper runway alignment
4. Misjudging aircraft float resulting in a long landing

ADDITIONAL MANUEVERS

ACCELERATED STALL

This maneuver will demonstrate that the aircraft can be stalled at a higher than normal airspeed. Because the stalling of the wing is dependent on the angle of attack and aircraft can be stalled at any attitude and any airspeed. However, the recovery procedure always has the same common element - decrease the angle of attack.

Objective: Demonstrates to student the aircraft can be stalled at higher than normal stall speeds.

Content:

Entry

1. Select an altitude that will allow an recovery no lower than 1500 AGL
2. Perform clearing turns
3. Decrease power
   a. Fuel - On
   b. Mixture - Rich
   c. Carburetor heat on
   d. Decrease power

   C-152 1500 rpm
   C-172 1500 rpm
   C-172RG 15 In Hg

   e. Oil Pressure - in green
   f. Trim (Optional)
4. Maintain 0 rate of sink until 1.25 x Vs1

   C-152 1500 rpm
   C-172 1500 rpm
   C-172RG 15 In Hg
5. For C-172RG set rpm to 2500
6. Power increase to

   C-152 2000 rpm
   C-172 2000 rpm
   C-172RG 20 In Hg
7. Lower nose to a level attitude
8. Bank - establish 45° bank with level attitude
9. **Keep ball centered**
10. Simultaneous reduce power and steady up elevator to hold level pitch
11. Ensure banks remains constant and level pitch is maintained until the stall occurs

RECOVERY

1. Power - increase (C-152: full, C-172: full, C-172RG 25 in Hg)
2. Level wings using coordinated rudder and ailerons
3. Carburetor heat - off
4. Pitch to Vy attitude when airspeed permits
5. Maintain attitude until positive rate of climb is established
6. Return to straight and level flight

Completion Standards:

1. Recovers with minimal altitude loss
2. Maintains control of aircraft

Common Errors:

1. Improper entry speed
2. Raising the nose too fast
3. Staring blindly over the nose
4. Not relaxing back pressure and entering secondary stall

CROSS CONTROLLED STALL

This maneuver is not required for the checkride but is necessary to demonstrate the effect of improper control techniques and to show the importance of using coordinated control pressures when ever you make a turn. This is the stall that is most apt to happen during a poorly planned and performed base-to-final turn. Pilots can be lead into this regime of flight by over shooting the centerline of the runway during turn and attempting to return to the centerline by use of uncoordinated rudder actions.

Objective: Demonstrates to student the effects of non-coordinated turns during a stall.

Content:

1. Select an altitude that will allow an recovery no lower than 1500 AGL.
2. Perform clearing turns
3. Identify prominent landmark
4. Decrease power
   a. Fuel - On
   b. Mixture - Rich
   c. Carburetor heat on
   d. decrease power to 1500 RPM (For C-172RG set rpm to 2500)
   e. Oil Pressure - in green
   f. Trim (Optional)
   g. Cowl flaps - Closed
5. Carb heat - ON
6. Reduce power

C-152	1500 rpm
C-172	1500 rpm
C-172RG	15 In Hg

7. Keep ball centered
8. When airspeed below Vfe flaps - 10° (maintain altitude 0 rate of sink)
9. Gear handle - Down (verify gear is down)
10. Flaps - 20° (maintain altitude 0 rate of sink)
11. Flaps - 30° (maintain altitude 0 rate of sink)
12. When reaching normal landing airspeed (C-152: 55 Kts, C-172: 60kts, C-172RG: 65kts), pitch to a landing attitude for three seconds
13. Establish Bank - 30° standard - & clear
14. Reduce power slowly to idle
15. Hold until imminent or full stall as specified by the examiner.
16. Apply rudder for an uncoodinated

Recovery

1. Simultaneously decrease pitch, level wings
2. Power - increase (C-172: full, C-172RG: 25 in Hg)
3. Carburetor heat - cold
4. Level wings and adjust pitch attitude for Vy.
5. Flaps - 20°
6. Gear - UP (at positive rate of climb)
7. Remaining flaps up slowly as airspeed builds up
8. Retract Flaps to 10°

9. Establish positive rate of climb
10. Retract Flaps to 0°
11. Establish positive rate of climb
12. Lower nose to cruise attitude while maintaining positive rate of climb
13. Return to original altitude and perform cruise checklist
14. When airspeed has increased decrease power

Completion Standards:
Not applicable for private or commercial tests

Common Errors:

ELEVATOR TRIM TAB STALL

This maneuver is not required for the checkride but is a valuable demonstration maneuver that will show what can happen when an aircraft is in the landing configuration at slow speeds and full power is applied as would be in a go around situation.

Objective: To demonstrate the effects of trim tab performance during flight operations with and without power applications.

Content:
1. Enter and fly traffic pattern per standard procedure but at a minimum of 1500 feet AGL
2. Complete before landing checklist
3. Reduce power to 1500 rpm
4. Reduce airspeed to approach speed for that aircraft
5. Extend flaps to 20°
7. Maintain airspeed appropriate for the aircraft
8. Extend flaps to 30°
9. Reduce airspeed to pilots operating handbook recommended speeds for short field landing
10. Trim the aircraft to maintain this airspeed
11. Apply full power with minimal pitch inputs to the controls

Recovery

1. Lower nose as necessary to break the stall
2. Power Verify (C-152: full, C-172: full, C-172RG 25 in Hg)
3. Pitch for Vy attitude and level wings
4. Return to original altitude and perform cruise checklist

Completion Standards:

Not applicable for private or commercial tests

RADIO COMMUNICATIONS

GENERAL

The following information is a guide to help new pilots get use to the communications part of their training. The majority of communications made basically follow the same format most of the time. The things that change are: your call sign, the name of the station you're calling, and the type of message.

The most basic format to follow is

1. Who they are "Downtown tower" for example
2 Who you are :student Cessna 757UX" for example
3. Where you are: "5 miles south" "at the ramp" for example
4. What you what: "Inbound for landing"

The formats and examples that follow are a little more involved, but allow more information to be passed between you and the station you are talking to.

HOWEVER THE MOST IMPORTANT ITEM IN COMMUNICATIONS IS VNDER8TANDING BETWEEN THE TWO PARTIES, SO IF THERE IS ANYDOUBTS JUST SAY WHAT YOU WANT IN PLAIN ENGLISH

LEAVING THE AIRPORT

Listen to ATIS on 127.85 (Automated Terminal Information System) and copy. An example of an ATIS transmission would be as follows:

Downtown information alpha, the 1645 Zulu weather, ceiling 2000 overcast, visibility 5 miles in haze, temperature 55 dew point 30, wind 350 at 12 knots, altimeter 30.15, runways 30 left and right are in use, contact ground with requested direction of flight and that you have alpha.

Contact Downtown Ground on 121.8
"Downtown ground, student Cessna 757UX. at the northwest ramp request taxi for a south departure with information alpha."

Ground will respond with instructions. For example:
757UX taxi to runway 30 left via taxiway alpha, delta, echo, and bravo"

You would reply: "Taxing to 30 left, Cessna 757UX"

At this time you would taxi to runway 30L as instructed you are cleared to cross all taxiway and runways except for the runway you are going to.

However sometimes when other runways are in use ground control will have you hold at certain places.

An example: "Cessna 757UX taxi to runway 30 left via taxiway alpha, delta, echo, and bravo hold short of 22"

Your reply: "Taxing to 30 left, hold short of 22, Cessna 757UX"

In this case you would taxi as before by the same route, but you would stop short of runway 22 until ground control calls you again and clears you across.

IF EVERY IN DOUBT CALL GROUND CONTROL TO VERIFY YOUR CLEARANCE

Taking off - At this point you have completed the before takeoff and final checklists. Next taxi up to the hold short line and set tower frequency in the radio 120.9

"Downtown tower, student Cessna 757UX, holding short of runway 12 right, ready for takeoff"
Tower will come back with three different responses

1. Cleared for takeoff "Cessna 757UX cleared for takeoff right turn approved"
2. Hold short (don't takeoff) "Cessna 757UX hold short landing traffic on short final"
3. Position and hold "Cessna 757UX position and hold on runway 12 right" In this case you would taxi out onto the runway and get align with the centerline markings but would not takeoff until tower called you again and cleared you for takeoff

When tower gives you this you must repeat the words Position and hold on your reply so he will be sure you understand his instructions

RETURNING TO THE AIRPORT

First listen to and copy the ATIS
Determine your position relative to the airport

Contact tower on 120.9
"Downtown tower, student Cessna 757UX, 7 miles south inbound for landing with delta"

Tower will reply:
"Cessna 757UX, report 2 miles southwest for a left downwind for 30L"

You reply: " will report left downwind for 30L, 757UX"

When you are 2 miles southeast: "Tower, student Cessna 757UX on left downwind for 30L"
Tower could reply: "Cessna 757UX, cleared for landing on 30L"
or could reply: "Cessna 757UX number two follow the Tampico on left base"
DO NOT TURN BASE UNTIL CLEARED FOR LANDING OR SEQUENCED BEHIND ANOTHER AIRCRAFT

COMMUNICATIONS AND PROCEDURES FOR OPERATIONS WITHIN AN CLASS C AIRSPACE (AIRPORT RADAR SURVEILLANCE AREA)

Prior to entering the Class C Airspace:

1. Listen to the ATIS and copy down the information. However, airports with an ARSA are usually more busier; therefore, the ATIS usually contains more information

For example,
Capital information delta, the 1645 Zulu weather, ceiling 1200 overcast, visibility 7 miles in haze, temperature 76 dew point 50, winds 030 at 15 Kts, altimeter setting 29.87, runway 4 in use, arriving flights contact approach on 118.6. VFR departures contact clearance delivery 121.9 with requested altitude and direction of flight and that you have delta

2. When reporting in to the approach control locate the VFR check point that you are over. Set 118.6 in your radio to contact approach

3. You say
Capital Approach Student Cessna 757UX over Aurborn (or the appropriate check point) level at 3500 feet for landing with information delta.

4. The approach controller will respond by saying something like:
Cessna 757UX maintain VFR conditions, squawk 0310 and ident descend to 2500 feet

5. Change the Transponder code to that indicated by the controller but crossing frequencies that start with 7 (e.g. 7705 etc.)

6. You say
Cessna 757UX out of 3500 for 2500 and squawking 0310

7. The approach controller will then say something to the effect:

Cessna 757UX is radar contact 25 miles south of the Capital airport, maintain 2500 feet, expect straight in runway 35

Since approach control responded and read back your call sign, you are clear to enter the ARSA; however, you are still responsible for you own navigation. If approach didn't read back your call sign, you would not be allowed in the ARSA. An example of this situation might be as follows:

Approach: "Aircraft 20 miles southwest of Springfield standby"

You would then standby on the radio while staying clear of the ARSA. Sometimes approach will give you vectors (headings on your compass) and different altitudes to fly. You should comply with these instructions; unless, these instructions will cause you the violate FAR's (For example, a vector that will take you into a cloud. In this case you should inform approach that you can't fly that heading or altitude because it will take you in to a cloud (or whatever reason) and request sometime different

8. Follow the controllers instructions and ask for radar vectors to the airport if you do not see the airport. Remember he can see you and traffic long before you can and can keep you out of danger.

When you get close to the airport, approach will have you contact tower

"Cessna 757UX, airport at 1 o'clock 3 miles, contact tower"

You: "Airport in sight, going to tower, 757UX"

You: "Springfield tower, student Cessna 757UX, 3 miles out for runway 4"

Tower: "Cessna 757UX in sight, cleared for landing on runway 4"

At this point you have landed and brought the aircraft under control

Tower: "Cessna 757UX, turn off at echo, contact ground point 7"

You: "Going to ground, 757UX"

You: "Springfield ground, student Cessna 757UX, off runway 4 at echo, request progressive taxi to Aeroservices"

Ground: "Cessna 757UX, taxi straight ahead, turn left at the second taxiway and follow the Baron to Aeroservices.

IF YOU DON'T KNOW WHERE THE TAXIWAYS RE. ASK FOR A "PROGRESSIVE TAXI

Departing the Class C Airspace:

Listen to the ATIS

contact clearance delivery on 121.9 and an example of your transmission might be as follows

"Springfield clearance, student Cessna 757UX at Aeroservices (your location) with information delta departing VFR request heading of 160, altitude of 5500"

Then they might say:

"Cessna 757UX climb and maintain 2200, squawk 4132"

You will say:

"Climb 2200, squawk 4132, student Cessna 757UX"

They will probably will say: "Read back correct, contact ground on 121.7 when ready to taxi"

You: "Going to ground, 757UX"

Now change the frequency on you radio to ground freq 121.7

"Springfield ground, student Cessna 757UX, at Aeroservices, ready for taxi"

"Cessna 757UX, taxi behind the traveler to runway 4 via taxiway Charlie and Bravo"

IF YOU DON'T KNOW WHERE THE TAXIWAYS RE. ASK FOR A "PROGRESSIVE TAXI

Now you are holding short of the runway and are finished with your final checks and now you will contact tower.
"Springfield tower, student Cessna 757UX, holding short of runway 4, ready for takeoff"

Tower: "Cessna 757UX cleared for takeoff, fly runway heading,

You: "Runway heading, 2000 ft. cleared for takeoff, 757UX"

After takeoff the tower will have you contact departure (Departure is the same guy you talk to inbound but you called him approach instead)

Tower: "Cessna 757UX, contact departure 118.6"

You: "Going to departure 118.6, 757UX"

You: "Springfield departure, student Cessna 757UX with you at 1700 ft climbing to 2000"

Departure: "Cessna 757UX, radar contact, 2 miles northeast of Springfield, climb and maintain 5500, turn right heading 160

You: "Climb maintain 5500, right 160 , Cessna 757UX"

After flying a while you will leave the ARSA and the radar service area and services will be terminated. For example:
Departure: "Cessna 757UX, radar service terminated, squawk 1200"

You: "757UX, roger"

At this point you can use the radio for what ever other purpose you want.

GETTING VFR FLIGHT FOLLOWING

Determine whose airspace you are in. You can get this information from your map, Airport Facility Directory, or from a Flight Service Station. The following is an example of a request for flight following.

You: "St. Louis approach, student Cessna 757UX"

Approach: "Cessna 757UX, St. Louis approach, go ahead"

You: "Approach, Cessna 757UX is a Cessna 152 over troy VOR at 2500 feet, request VFR flight following to St. Louis Downtown"

Approach: "Cessna 757UX squawk 0105"

You: "757UX, wilco"

Approach: "Cessna 757UX, radar contact 2 miles south of Troy VOR"

You: "757UX, roger"

At this point approach will give you radar advisories with regard to other traffic. You are still responsible for navigation and collision avoidance. Furthermore, flight following is done on a workload basis, so sometimes you might not be able to get it"

At some point you or the controller are going to cancel it. You just can't change frequencies without letting him know first. So as you approach your destination you will want to cancel so you can change the freq to tower or ATIS

You: "St. Louis approach, student Cessna 757UX would like to cancel flight following"

Approach: "757UX roger, flight following is canceled, squawk
1vnn~

You: "757UX wilco"
Now you can change frequencies

GETTING WEATHER FROM FLIGHT WATCH

Get the frequency of the Enroute Flight Advisory Service from the Airport/Facility Directory of the FSS providing this. Usually on 122.0

Get the frequency of the Enroute Flight Advisory Service from the Airport/Facility Directory of the FSS providing this. Usually on 122.0

Flight Watch: "Cessna 757UX, Kansas City Flight Watch, go ahead "

You: "Flight watch, Cessna 757UX is a Cessna 152 over the Troy VOR enroute to Chicago Midway Airport, request the current conditions at Midway and Bloomington IL"

Flight watch will now provide the information that you requested. At that time you will thank him and give him a PIREP if you have wish.

GIVING A PIREP (PILOT WEATHER REPORT)

You: "Kansas City Flight Watch, student Cessna 757UX, 10 south of the Decator VOR with a PIREP"
Flight watch: "Cessna 757UX, flight watch, go-ahead"

You would given the PIREP consisting of the following information if possible:

1. Location
2. Altitude
3. Aircraft type
4. Sky Cover
5. Flight visibility
6. Temperature
7. Wind
8. Turbulence
9. Icing
10. Remarks

Sometimes it won't be possible to give all the above information. For example, estimating the winds aloft is difficult to be accurate unless the aircraft has special navigation equipment. Furthermore, icing reports can't be given if your flying VFR.

Example PIREP: "Cessna 757UX is a C152 10 miles south of Pocket City VOR at 3500ft, sky is clear above, visibility 10 miles, temp is 5 degree (C), Moderate turbulence, negative icing"

DEFINITIONS

Federal Aviation Regulations General definitions.

Administrator
: the Federal Aviation Administrator or any person to whom he has delegated his authority in the matter concerned.

Aerodynamic coefficients
: non-dimensional coefficients for aerodynamic forces and moments.

Air carrier
: a person who undertakes directly by lease, or other arrangement, to engage in air transportation.

Air commerce
: interstate, overseas, or foreign air commerce or the transportation of mail by aircraft or any operation or navigation of aircraft within the limits of any Federal airway or any operation or navigation of aircraft which directly affects, or which may endanger safety in, interstate, overseas, or foreign air commerce.

Aircraft
: a device that is used or intended to be used for flight in the air.

Aircraft engine
: an engine that is used or intended to be used for propelling aircraft. It includes turbosuperchargers, appurtenances, and accessories necessary for its functioning, but does not include propellers.

Airframe
: the fuselage, booms, nacelles, cowlings, fairings, airfoil surfaces (including rotors but excluding propellers and rotating airfoils of engines), and landing gear of an aircraft and their accessories and controls.

Airplane
: an engine-driven fixed-wing aircraft heavier than air, that is supported in flight by the dynamic reaction of the air against its wings.

Airport
: an area of land or water that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.

Airship
: an engine-driven lighter-than-air aircraft that can be steered.

Air traffic
: aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

Air traffic clearance
: an authorization by air traffic control, for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace.

Air traffic control

a service operated by appropriate authority to promote the safe, orderly, and expeditious flow of air traffic.

Air transportation

interstate, overseas, or foreign air transportation or the transportation of mail by aircraft.

Alternate airport

an airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.

Altitude engine

a reciprocating aircraft engine having a rated takeoff power that is producible from sea level to an established higher altitude.

Appliance

any instrument, mechanism, equipment, part, apparatus, appurtenance, or accessory, including communications equipment, that is used or intended to be used in operating or controlling an aircraft in flight, is installed in or attached to the aircraft, and is not part of an airframe, engine, or propeller.

Approved

unless used with reference to another person, means approved by the Administrator.

Area navigation (RNAV)

a method of navigation that permits aircraft operations on any desired course within the coverage of station-referenced navigation signals or within the limits of self-contained system capability.

Area navigation low route

an area navigation route within the airspace extending upward from 1,200 feet above the surface of the earth to, but not including, 18,000 feet MSL.

Area navigation high route

an area navigation route within the airspace extending upward from, and including, 18,000 feet MSL to flight level 450.

Armed Forces

the Army, Navy, Air Force, Marine Corps, and Coast Guard, including their regular and reserve components and members serving without component status.

Autorotation

a rotorcraft flight condition in which the lifting rotor is driven entirely by action of the air when the rotorcraft is in motion.

Auxiliary rotor

a rotor that serves either to counteract the effect of the main rotor torque on a rotorcraft or to maneuver the rotorcraft about one or more of its three principal axes.

Balloon

a lighter-than-air aircraft that is not engine driven.

Brake horsepower

the power delivered at the propeller shaft (main drive or main output) of an aircraft engine.

Calibrated airspeed

the indicated airspeed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.

Canard

the forward wing of a canard configuration and may be a fixed, movable, or variable geometry surface, with or without control surfaces.

Canard configuration a configuration in which the span of the forward wing is substantially less than that of the main wing.

Category

(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a broad classification of aircraft. Examples include: airplane; rotorcraft; glider; and lighter-than-air; and

(2) As used with respect to the certification of aircraft, means a grouping of aircraft based upon intended use or operating limitations. Examples include: transport, normal, utility, acrobatic, limited, restricted, and provisional.

Category A

with respect to transport category rotorcraft, means multiengine rotorcraft designed with engine and system isolation features specified in Part 29 and utilizing scheduled takeoff and landing operations under a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight in the event of engine failure.

Category B

with respect to transport category rotorcraft, means single- engine or multiengine rotorcraft which do not fully meet all Category A standards. Category B rotorcraft have no guaranteed stay-up ability in the event of engine failure and unscheduled landing is assumed.

Category II operations

with respect to the operation of aircraft, means a straight-in ILS approach to the runway of an airport under a Category II ILS instrument approach procedure issued by the Administrator or other appropriate authority.

Category III operations

with respect to the operation of aircraft, means an ILS approach to, and landing on, the runway of an airport using a Category III ILS instrument approach procedure issued by the Administrator or other appropriate authority.

Ceiling

the height above the earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as "broken"overcast or "obscuration and not classified as "thin" or "partial".

Civil aircraft

aircraft other than public aircraft.

Class

(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a classification of aircraft within a category having similar operating characteristics. Examples include: single engine; multiengine; land; water; gyroplane; helicopter; airship; and free balloon; and

(2) As used with respect to the certification of aircraft, means a broad grouping of aircraft having similar characteristics of propulsion, flight, or landing. Examples include: airplane; rotorcraft; glider; balloon; landplane; and seaplane.

Cleared for landing

you must land to a full stop, you can't takeoff again, you may do a go-around in the interest of safety but you must let the tower know

Clearway

(1) For turbine engine powered airplanes certificated after August 29, 1959, an area beyond the runway, not less than 500 feet wide, centrally located about the extended centerline of the runway, and under the control of the airport authorities. The clearway is expressed in terms of a clearway plane, extending from the end of the runway with an upward slope not exceeding 1.25 percent, above which no object nor any terrain protrudes. However, threshold lights may protrude above the plane if their height above the end of the runway is 26 inches or less and if they are located to each side of the runway.
(2) For turbine engine powered airplanes certificated after September 30, 1958, but before August 30, 1959, an area beyond the takeoff runway extending no less than 300 feet on either side of the extended centerline of the runway, at an elevation no higher than the elevation of the end of the runway, clear of all fixed obstacles, and under the control of the airport authorities.

Climbout speed

with respect to rotorcraft, means a referenced airspeed which results in a flight path clear of the height-velocity envelope during initial climbout.

Commercial operator

a person who, for compensation or hire, engages in the carriage by aircraft in air commerce of persons or property, other than as an air carrier or foreign air carrier or under the authority of Part 375 of this title. Where it is doubtful that an operation is for "compensation or hire the test applied is whether the carriage by air is merely incidental to the person's other business or is, in itself, a major enterprise for profit.

Controlled airspace

an airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

Note--Controlled airspace

is a generic term that covers Class A, Class B, Class C, Class D, and Class E airspace.

Crewmember

a person assigned to perform duty in an aircraft during flight time.

Critical altitude

the maximum altitude at which, in standard atmosphere, it is possible to maintain, at a specified rotational speed, a specified power or a specified manifold pressure. Unless otherwise stated, the critical altitude is the maximum altitude at which it is possible to maintain, at the maximum continuous rotational speed, one of the following:
(1) The maximum continuous power, in the case of engines for which this power rating is the same at sea level and at the rated altitude.
(2) The maximum continuous rated manifold pressure, in the case of engines, the maximum continuous power of which is governed by a constant manifold pressure.

Critical engine

the engine whose failure would most adversely affect the performance or handling qualities of an aircraft.

Decision height

with respect to the operation of aircraft, means the height at which a decision must be made, during an ILS or PAR instrument approach, to either continue the approach or to execute a missed approach.

Equivalent airspeed

means the calibrated airspeed of an aircraft corrected for adiabatic compressible flow for the particular altitude. Equivalent airspeed is equal to calibrated airspeed in standard atmosphere at sea level.

"Extended over-water operation

(1) With respect to aircraft other than helicopters, an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline; and
(2) With respect to helicopters, an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline and more than 50 nautical miles from an off-shore heliport structure.

External load

a load that is carried, or extends, outside of the aircraft fuselage.

External-load attaching means

the structural components used to attach an external load to an aircraft, including external-load containers, the backup structure at the attachment points, and any quick-release device used to jettison the external load.

Fireproof

(1) With respect to materials and parts used to confine fire in a designated fire zone, means the capacity to withstand at least as well as steel in dimensions appropriate for the purpose for which they are used, the heat produced when there is a severe fire of extended duration in that zone; and
(2) With respect to other materials and parts, means the capacity to withstand the heat associated with fire at least as well as steel in dimensions appropriate for the purpose for which they are used.

Fire resistant

(1) With respect to sheet or structural members means the capacity to withstand the heat associated with fire at least as well as aluminum alloy in dimensions appropriate for the purpose for which they are used; and
(2) With respect to fluid-carrying lines, fluid system parts, wiring, air ducts, fittings, and powerplant controls, means the capacity to perform the intended functions under the heat and other conditions likely to occur when there is a fire at the place concerned.

Flame resistant

not susceptible to combustion to the point of propagating a flame, beyond safe limits, after the ignition source is removed.

Flammable

with respect to a fluid or gas, means susceptible to igniting readily or to exploding.

Flap extended speed

means the highest speed permissible with wing flaps in a prescribed extended position.

Flash resistant

not susceptible to burning violently when ignited.

Flightcrew member

a pilot, flight engineer, or flight navigator assigned to duty in an aircraft during flight time.

Flight level

a level of constant atmospheric pressure related to a reference datum of 29.92 inches of mercury. Each is stated in three digits that represent hundreds of feet. For example, flight level 250 represents a barometric altimeter indication of 25,000 feet; flight level 255, an indication of 25,500 feet.

Flight plan

specified information, relating to the intended flight of an aircraft, that is filed orally or in writing with air traffic control.

Flight time

the time from the moment the aircraft first moves under its own power for the purpose of flight until the moment it comes to rest at the next point of landing. ("Block-to-block" time.)

Flight visibility

the average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent unlighted objects may be seen and identified by day and prominent lighted objects may be seen and identified by night.

Foreign air carrier

any person other than a citizen of the United States, who undertakes directly, by lease or other arrangement, to engage in air transportation.

Foreign air commerce

the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in the United States and any place outside thereof; whether such commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

Foreign air transportation

the carriage by aircraft of persons or property as a common carrier for compensation or hire, or the carriage of mail by aircraft, in commerce between a place in the United States and any place outside of the United States, whether that commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

Forward wing

a forward lifting surface of a canard configuration or tandem-wing configuration airplane. The surface may be a fixed, movable, or variable geometry surface, with or without control surfaces.

Glider

a heavier-than-air aircraft, that is supported in flight by the dynamic reaction of the air against its lifting surfaces and whose free flight does not depend principally on an engine.

Ground visibility

prevailing horizontal visibility near the earth's surface as reported by the United States National Weather Service or an accredited observer.

Gyroplane

a rotorcraft whose rotors are normally engine-driven for takeoff, hovering, and landing, and for forward flight through part of its speed range, and whose means of propulsion, consisting usually of conventional propellers, is independent of the rotor system.

Gyroplane

a rotorcraft whose rotors are not engine-driven, except for initial starting, but are made to rotate by action of the air when the rotorcraft is moving; and whose means of propulsion, consisting usually of conventional propellers, is independent of the rotor system.

Helicopter

a rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors.

Heliport

an area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters.

Idle thrust

the jet thrust obtained with the engine power control level set at the stop for the least thrust position at which it can be placed.

IFR conditions

weather conditions below the minimum for flight under visual flight rules.

IFR over-the top

with respect to the operation of aircraft, means the operation of an aircraft over-the-top on an IFR flight plan when cleared by air traffic control to maintain "VFR conditions" or "VFR conditions on top".

Indicated airspeed

the speed of an aircraft as shown on its pitot static airspeed indicator calibrated to reflect standard atmosphere adiabatic compressible flow at sea level un-corrected for airspeed system errors.

Instrument

a device using an internal mechanism to show visually or aurally the attitude, altitude, or operation of an aircraft or aircraft part. It includes electronic devices for automatically controlling an aircraft in flight.

Interstate air commerce

the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in any State of the United States, or the District of Columbia, and a place in any other State of the United States, or the District of Columbia; or between places in the same State of the United States through the airspace over any place outside thereof; or between places in the same territory or possession of the United States, or the District of Columbia.

Interstate air transportation

the carriage by aircraft of persons or property as a common carrier for compensation or hire, or the carriage of mail by aircraft in commerce:
(1) Between a place in a State or the District of Columbia and another place in another State or the District of Columbia;
(2) Between places in the same State through the airspace over any place outside that State; or
(3) Between places in the same possession of the United States;

Whether that commerce moves wholly by aircraft of partly by aircraft and partly by other forms of transportation.

Intrastate air transportation
the carriage of persons or property as a common carrier for compensation or hire, by turbojet-powered aircraft capable of carrying thirty or more persons, wholly within the same State of the United States.

Kite
a framework, covered with paper, cloth, metal, or other material, intended to be flown at the end of a rope or cable, and having as its only support the force of the wind moving past its surfaces.

Landing gear extended speed
the maximum speed at which an aircraft can be safely flown with the landing gear extended.

Landing gear operating speed
the maximum speed at which the landing gear can be safely extended or retracted.

Large aircraft
aircraft of more than 12,500 pounds, maximum certificated takeoff weight.

Lighter-than-air aircraft
aircraft that can rise and remain suspended by using contained gas weighing less than the air that is displaced by the gas.

Load factor
the ratio of a specified load to the total weight of the aircraft. The specified load is expressed in terms of any of the following: aerodynamic forces, inertia forces, or ground or water reactions.

Low approach
an approach over the runway where the pilot intentionally does not make contact with the runway

Mach number
the ratio of true airspeed to the speed of sound.

Main rotor
the rotor that supplies the principal lift to a rotorcraft.

Maintenance
inspection, overhaul, repair, preservation, and the replacement of parts, but excludes preventive maintenance.

Major alteration
an alteration not listed in the aircraft, aircraft engine, or propeller specifications--
(1) That might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or
(2) That is not done according to accepted practices or cannot be done by elementary operations.

Major repair
a repair:
(1) That, if improperly done, might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or
(2) That is not done according to accepted practices or cannot be done by elementary operations.

Manifold pressure

absolute pressure as measured at the appropriate point in the induction system and usually expressed in inches of mercury.

Medical certificate

acceptable evidence of physical fitness on a form prescribed by the Administrator.

Minimum descent altitude

the lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure, where no electronic glide slope is provided.

Minor alteration

an alteration other than a major alteration.

Minor repair

a repair other than a major repair.

Navigable airspace

airspace at and above the minimum flight altitudes prescribed by or under this chapter, including airspace needed for safe takeoff and landing.

Night

the time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time.

Nonprecision approach procedure

a standard instrument approach procedure in which no electronic glide slope is provided.

Operatewith respect to aircraft

use, cause to use or authorize to use aircraft, for the purpose (except as provided in Sec. 91.13 of this chapter) of air navigation including the piloting of aircraft, with or without the right of legal control (as owner, lessee, or otherwise).

Operational control

with respect to a flight, means the exercise of authority over initiating, conducting or terminating a flight.

Option

allows you to landing, touch and go, stop and go, low approach

Overseas air commerce

the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in any State of the United States, or the District of Columbia, and any place in a territory or possession of the United States; or between a place in a territory or possession of the United States, and a place in any other territory or possession of the United States.

Overseas air transportation

the carriage by aircraft of persons or property as a common carrier for compensation or hire, or the carriage of mail by aircraft, in commerce:
(1) Between a place in a State or the District of Columbia and a place in a possession of the United States; or
(2) Between a place in a possession of the United States and a place in another possession of the United States; whether that commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.

Over-the-top

above the layer of clouds or other obscuring phenomena forming the ceiling.

Parachute

a device used or intended to be used to retard the fall of a body or object through the air.

Person

an individual, firm, partnership, corporation, company, association, joint-stock association, or governmental entity. It includes a trustee, receiver, assignee, or similar representative of any of them.

Pilotage

navigation by visual reference to landmarks.

Pilot in command

the pilot responsible for the operation and safety of an aircraft during flight time.

Pitch setting

the propeller blade setting as determined by the blade angle measured in a manner, and at a radius, specified by the instruction manual for the propeller.

Positive control

control of all air traffic, within designated airspace, by air traffic control.

Precision approach procedure

a standard instrument approach procedure in which an electronic glide slope is provided, such as ILS and PAR.

Preventive maintenance

simple or minor preservation operations and the replacement of small standard parts not involving complex assembly operations.

Prohibited area

designated airspace within which the flight of aircraft is prohibited.

Propeller

a device for propelling an aircraft that has blades on an engine-driven shaft and that, when rotated, produces by its action on the air, a thrust approximately perpendicular to its plane of rotation. It includes control components normally supplied by its manufacturer, but does not include main and auxiliary rotors or rotating airfoils of engines.

Public aircraft

an aircraft used only for the United States Government, or owned and operated (except for commercial purposes), or exclusively leased for at least 90 continuous days, by a government (except the United States Government), including a State, the District of Columbia, or a territory or possession of the United States, or political subdivision of that government; but does not include a government-owned aircraft transporting property for commercial purposes, or transporting passengers other than transporting (for other than commercial purposes) crewmembers or other persons aboard the aircraft whose presence is required to perform, or is associated with the performance of, a governmental function such as fire fighting, search and rescue, law enforcement, aeronautical research, or biological or geological resource management; or transporting (for other than commercial purposes) persons aboard the aircraft if the aircraft is operated by the Armed Forces or an intelligence agency of the United States. An aircraft described in the preceding sentence shall, notwithstanding any limitation relating to use of the aircraft for commercial purposes, be considered to be a public aircraft for the purposes of this Chapter without regard to whether the aircraft is operated by a unit of government on behalf of another unit of government, pursuant to a cost reimbursement agreement between such units of government, if the unit of government on whose behalf the operation is conducted certifies to the Administrator of the Federal Aviation Administration that the operation was necessary to respond to a significant and imminent threat to life or property (including natural resources) and that no service by a private operator was reasonably available to meet the threat.

Rated continuous OEI power

with respect to rotorcraft turbine engines, means the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under Part 33 of this chapter, and limited in use to the time required to complete the flight after the failure of one engine of a multiengine rotorcraft.

Rated maximum continuous augmented thrust

with respect to turbojet engine type certification, means the approved jet thrust that is developed statically or in flight, in standard atmosphere at a specified altitude, with fluid injection or with the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Part 33 of this chapter, and approved for unrestricted periods of use.

Rated maximum continuous power

with respect to reciprocating, turbopropeller, and turboshaft engines, means the approved brake horsepower that is developed statically or in flight, in standard atmosphere at a specified altitude, within the engine operating limitations established under Part 33, and approved for unrestricted periods of use.

Rated maximum continuous thrust

with respect to turbojet engine type certification, means the approved jet thrust that is developed statically or in flight, in standard atmosphere at a specified altitude, without fluid injection and without the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Part 33 of this chapter, and approved for unrestricted periods of use.

Rated takeoff augmented thrust

with respect to turbojet engine type certification, means the approved jet thrust that is developed statically under standard sea level conditions, with fluid injection or with the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Part 33 of this chapter, and limited in use to periods of not over 5 minutes for takeoff operation.

Rated takeoff power

with respect to reciprocating, turbopropeller, and turboshaft engine type certification, means the approved brake horsepower that is developed statically under standard sea level conditions, within the engine operating limitations established under Part 33, and limited in use to periods of not over 5 minutes for takeoff operation.

Rated takeoff thrust

with respect to turbojet engine type certification, means the approved jet thrust that is developed statically under standard sea level conditions, without fluid injection and without the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Part 33 of this chapter, and limited in use to periods of not over 5 minutes for takeoff operation.

Rated 30-minute OEI power

with respect to rotorcraft turbine engines, means the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under Part 33 of this chapter, and limited in use to a period of not more than 30 minutes after the failure of one engine of a multiengine rotorcraft.

Rated 2 1/2 -minute OEI power

with respect to rotorcraft turbine engines, means the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under Part 33 of this chapter, and limited in use to a period of not more than 2 1/2 minutes after the failure of one engine of a multiengine rotorcraft.

Rating

a statement that, as a part of a certificate, sets forth special conditions, privileges, or limitations.

Reporting point

a geographical location in relation to which the position of an aircraft is reported.

Restricted area

airspace designated under Part 73 of this chapter within which the flight of aircraft, while not wholly prohibited, is subject to restriction.

RNAV way point (W/P)

a predetermined geographical position used for route or instrument approach definition or progress reporting purposes that is defined relative to a VORTAC station position.

Rocket

an aircraft propelled by ejected expanding gases generated in the engine from self-contained propellants and not dependent on the intake of outside substances. It includes any part which becomes separated during the operation.

Rotorcraft

heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors.

Rotorcraft-load combination

the combination of a rotorcraft and an external-load, including the external-load attaching means. Rotorcraft-load combinations are designated as Class A, Class B, Class C, and Class D, as follows:
(1) "Class A rotorcraft-load combination one in which the external load cannot move freely, cannot be jettisoned, and does not extend below the landing gear.
(2) "Class B rotorcraft-load combination one in which the external load is jettisonable and is lifted free of land or water during the rotorcraft operation.
(3) "Class C rotorcraft-load combination one in which the external load is jettisonable and remains in contact with land or water during the rotorcraft operation.
(4) "Class D rotorcraft-load combination one in which the external- load is other than a Class A, B, or C and has been specifically approved by the Administrator for that operation.

Route segment

a part of a route. Each end of that part is identified by:
(1) A continental or insular geographical location; or
(2) A point at which a definite radio fix can be established.

Sea level engine

a reciprocating aircraft engine having a rated takeoff power that is producible only at sea level.

Second in command

a pilot who is designated to be second in command of an aircraft during flight time.

Show

unless the context otherwise requires, means to show to the satisfaction of the Administrator.

Small aircraft

aircraft of 12,500 pounds or less, maximum certificated takeoff weight.

Special VFR conditions

meteorological conditions that are less than those required for basic VFR flight in controlled airspace and in which some aircraft are permitted fight under visual flight rules.

Special VFR operations

aircraft operating in accordance with clearances within controlled airspace in meteorological conditions less than the basic VFR weather minima. Such operations must be requested by the pilot and approved by ATC.

Standard atmosphere

the atmosphere defined in U.S. Standard Atmosphere, 1962 (Geopotential altitude tables).

Stop and go

similar to a touch n go but the aircraft is brought to a complete stop before taking off again (usually done to meet night currency requirements)

Stopway

an area beyond the takeoff runway, no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff, without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

Takeoff power

(1) With respect to reciprocating engines, means the brake horsepower that is developed under standard sea level conditions, and under the maximum conditions of crankshaft rotational speed and engine manifold pressure approved for the normal takeoff, and limited in continuous use to the period of time shown in the approved engine specification; and
(2) With respect to turbine engines, means the brake horsepower that is developed under static conditions at a specified altitude and atmospheric temperature, and under the maximum conditions of rotor shaft rotational speed and gas temperature approved for the normal takeoff, and limited in continuous use to the period of time shown in the approved engine specification.

Takeoff safety speed

a referenced airspeed obtained after lift-off at which the required one-engine-inoperative climb performance can be achieved.

Takeoff thrust

with respect to turbine engines, means the jet thrust that is developed under static conditions at a specific altitude and atmospheric temperature under the maximum conditions of rotorshaft rotational speed and gas temperature approved for the normal takeoff, and limited in continuous use to the period of time shown in the approved engine specification.

Tandem wing configuration

a configuration having two wings of similar span, mounted in tandem.

Time in service

with respect to maintenance time records, means the time from the moment an aircraft leaves the surface of the earth until it touches it at the next point of landing.

Touch and go

you can touch down on the runway and bring the aircraft under control without stopping and make a rolling takeoff

True airspeed

the airspeed of an aircraft relative to undisturbed air.

Traffic pattern

the traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from, an airport.

Type

(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a specific make and basic model of aircraft, including modifications thereto that do not change its handling or flight characteristics. Examples include: DC-7, 1049, and F-27; and
(2) As used with respect to the certification of aircraft, means those aircraft which are similar in design. Examples include: DC-7 and DC-7C; 1049G and 1049H; and F-27 and F-27F.
(3) As used with respect to the certification of aircraft engines means those engines which are similar in design. For example, JT8D and JT8D-7 are engines of the same type, and JT9D-3A and JT9D-7 are engines of the same type.

United States

in a geographical sense, means (1) the States, the District of Columbia, Puerto Rico, and the possessions, including the territorial waters, and (2) the airspace of those areas.

United States air carrier
: a citizen of the United States who undertakes directly by lease, or other arrangement, to engage in air transportation.

VFR over-the-top
: with respect to the operation of aircraft, means the operation of an aircraft over-the-top under VFR when it is not being operated on an IFR flight plan.

Winglet or tip fin
: an out-of-plane surface extending from a lifting surface. The surface may or may not have control surfaces.

ABBREVIATIONS AND SYMBOLS.

AGL	above ground level.
ALS	approach light system.
ASR	airport surveillance radar.
ATC	air traffic control.
CAS	calibrated airspeed.
CAT II	Category II.
CONSOL or CONSOLAN	a kind of low or medium frequency long range navigational aid.
DH	decision height.
DME	distance measuring equipment compatible with TACAN.
EAS	equivalent airspeed.
FAA	Federal Aviation Administration.
FM	fan marker.
GS	glide slope.
HIRL	high-intensity runway light system.
IAS	indicated airspeed.
ICAO	International Civil Aviation Organization.
IFR	instrument flight rules.
ILS	instrument landing system.
IM	ILS inner marker.
INT	intersection.
LDA	localizer-type directional aid.
LFR	low-frequency radio range.
LMM	compass locator at middle marker.
LOC	ILS localizer.
LOM	compass locator at outer marker.
M	mach number.
MAA	maximum authorized IFR altitude.
MALS	medium intensity approach light system.
MALSR	medium intensity approach light system with runway alignment indicator lights.
MCA	minimum crossing altitude.
MDA	minimum descent altitude.
MEA	minimum en route IFR altitude.
MM	ILS middle marker.
MOCA	minimum obstruction clearance altitude.
MRA	minimum reception altitude.
MSL	mean sea level.
NDB(ADF)	nondirectional beacon (automatic direction finder).
NOPT	no procedure turn required.
OEI	one engine inoperative.
OM	ILS outer marker.
PAR	precision approach radar.
RAIL	runway alignment indicator light system.
RBN	radio beacon.
RCLM"	runway centerline marking.
RCLS	runway centerline light system.
REIL	runway end identification lights.
RR	low or medium frequency radio range station.
RVR	runway visual range as measured in the touchdown zone area.
SALS	short approach light system.
SSALS	simplified short approach light system.
SSALSR	simplified short approach light system with runway alignment indicator lights.
TACAN	ultra-high frequency tactical air navigational aid.
TAS	true airspeed.
TCAS	a traffic alert and collision avoidance system.

TDZL	touchdown zone lights.
TVOR	very high frequency terminal omnirange station.
VA	design maneuvering speed.
VB	design speed for maximum gust intensity.
VC	design cruising speed.
VD	design diving speed.
VDF/MDF	demonstrated flight diving speed.
VF	design flap speed.
VFC/MFC	maximum speed for stability characteristics.
VFE	maximum flap extended speed.
VH	maximum speed in level flight with maximum continuous power.
VLE	maximum landing gear extended speed.
VLO	maximum landing gear operating speed.
VLOF	lift-off speed.
VMC	minimum control speed with the critical engine inoperative.
VMO/MMO	maximum operating limit speed.
VMU	minimum unstick speed.
VNE	never-exceed speed.
VNO	maximum structural cruising speed.
VR	rotation speed.
VS	the stalling speed or the minimum steady flight speed at which the airplane is controllable.
VS0	the stalling speed or the minimum steady flight speed in the landing configuration.
VS1	the stalling speed or the minimum steady flight speed obtained in a specific configuration.
VTOSS	takeoff safety speed for Category A rotorcraft.
VX	speed for best angle of climb.
VY	speed for best rate of climb.
V1	takeoff decision speed (formerly denoted as critical engine failure speed).
V2	takeoff safety speed.
V2 min	minimum takeoff safety speed.
VFR	visual flight rules.
VHF	very high frequency.
VOR	very high frequency omnirange station.
VORTAC	collocated VOR and TACAN.